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ENTOMOLOGICAL NEWS

AND

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ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XV. JANUARY, 1904. NO. 1.

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Our frontispiece shows the beauties and possibilities of the three-color process for insects like butterflies and moths which have a plane surface. These brilliant butterflies have been photographed direct, and the three-color plates were made by the well-known house of illustrators and engravers, Gatchel & Manning of Philadelphia. The plates were made to test the possibilities of the colored inks made for this kind of work by the Charles Eneu Johnson Co. of Philadelphia. We are firmly convinced that the possibilities of photography for the illustration of insects is by no means fully realized, but it is necessary to have more than a commercial interest in it. The entomologist, the plate maker and an expert photographer should work together to achieve the best results, more especially when the smaller species are figured.

Standards of the Number of Eggs Laid by Insects. II.

Being average obtained by actual count from the combined eggs of twenty (20) depositions or masses.

By A. Arsene Girault.

Standards, of course, are absurd; there are none in such cases as this. The following are offered to serve as *general* averages of the number of eggs laid normally, and to fix a more or less definite range. Time is saved.

The idea of compiling these was suggested by the fact that the estimates and ratings of authors—founded on one or two counts, and too frequently being but estimates in the true sense of the word—differed so widely as to cause a little confusion.

A few examples given below will illustrate. Only two insects are included in this installment; more are to follow whenever the conditions are such as to make it practicable: (1.) eggs in definite masses; (2) eggs in sufficient quantities.

The first of this series was published in the Entomological News, 1901, p. 305.

2.* Clisiocampa americana.

No.	Date—1903	No. counted, per mass	Successive totals	Av. per egg mass	Max.	Min.	Range	
1	Feb. 1	324	324	324			466	
2	" 10	332	656	328				
3	" 10	313	969	323		313		
4	" 11	400	1369	342				
5	" 16	354	1723	345				
6	March 6	335	2058	343				
7	" 6	376	2434	347.7				
8	" 6	370	2804	350.5				
9	" 6	376	3180	353.3				
10	" 6	332	3512	351.2				
11	" 6	417	3929	357.1				
12	" 7	443	4372	364.3				
13	" 7	401	4773	367.1				
14	" 7	363	5136	366.8				
15	" 7	331	5467	371.1				
16	" 9	433	5900	368.7				
17	" 9	366	6266	368.6				
18	" 9	368	6634	368.5				
19	" 16	406	7040	370.5				
20	" 17	466	7506	375.3	466		313	
20			7506	375.5	466	313	153	Finals

* For the first of these series, see Ent. News, *ubi supra*.

The lowest recorded count—not included here, being abnormal—was *99*.

"The females lay their eggs, about *three* hundred in number, in a belt."—C. H. Fernald, Bull. Mass. Hatch. Exp. Sta., No. 12, p. 23.

". . . . about *250* eggs, . . ."—Bull. Neb. Exp. Sta., No. 14, June, 1890, pp. 25, 29, quatis.

"The eggs are deposited during that month upon the smaller twigs of our fruit trees in ring-like clusters, each composed of 15-20 rows, containing in all from *two* to *three* hundred."—Saunders. "Insects Inj. to Fruit," p. 48.

". . . . (about *300* in number) . . . ."—Lugger. Bull. Minn. Agr. Exp. Sta,, No. 61, Dec., '98, p. 192.

3. CHIONASPIS FURFURUS.

No.	Date—1903	No. counted, per mass	Successive totals	Av. per egg mass	Max.	Min.	Range	
1	Nov. 1902	79	79	79			84	
2	"	63	142	71				
3	"	83	225	75				
4	Nov.	42	267	66.7				
5	"	62	329	65 8	84			
6	"	84	413	68.8				
7	"	63	476	68				
8	Mch. 27 '3	61	537	67.1				
9	"	79	616	68.3				
10	"	70	686	68.6				
11	"	75	761	69.1				
12	28	82	843	70.2				
13	28	33	876	67.3		33		
14	31	59	935	66.7				
15	31	82	1017	67.8				
16	31	59	1076	67.3				
17	Apl. 1 '03	59	1135	66.7				
18	4	76	1211	67.2				
19	4	58	1269	66.7				
20	7	62	1331	66.5				
20			1331	66 5	84	33	51	Finals

The lowest count recorded is that given in foregoing; the highest, not mentioned in foregoing because suspected to be the combined eggs from two scales, is *122*. The estimates on the number of eggs of this species are about correct.

Howard, from many counts, gives as the average number of eggs in healthy masses of a closely related species, *Mytilaspis pomorum*, from 65–75, and the range from 50–100.

The Colossal Silk-worm Moths of the Genera Attacus and Rothschildia.

By Alpheus S. Packard.

The word colossal is used advisedly in speaking of these moths, for they are mammoths compared with the most primitive Lepidoptera, such as *Eryocephala* and *Micropteryx*, which are no larger than small-sized caddis-flies.

The species of *Attacus* comprise the largest in size and expanse of wings of all the Lepidoptera, although the bulk of the body is exceeded by some Sphingidæ. The lamented Mr. Grote had justly separated the American species, before that referred to *Attacus*, under the name *Rothschildia* from *A. atlas*. Our own studies both as to the larval and adult characters had also led us to regard the American Attaci as belonging to a distinct genus, and we had given a ms. name to the group. In their venation and the antennæ as well as other characters the species of *Rothschildia*, which among Lepidoptera are typically neogæan, not occurring in Africa or Asia, present constant differences from *Attacus*. There are also noticeable differences in the markings, *Attacus atlas* and its congeners presenting constant differences.

The presence of a lanceolate oval clear spot in the last subcostal cell shows that *Attacus* is more specialized than *Rothschildia*. The ocellus present near the apex of the forewings of *Rothschildia* is wanting in the species of *Attacus*, its place being taken by a deep indian red slash, ending in a fine line passing to the outer edge of the wing.

As regards the larval characters of the two genera in all their stages we now have very fair material. We are indebted to M. G. Poujade for excellent figures of the larva of *Attacus atlas*, (Annales. Soc. Ent. France, 1880, Pl. 8). I have, with the aid of Mr. L. H. Joutel, reared the larva of, and have colored drawings of *Rothschildia orizaba*, *R. jorulla* (*cinctus*), and in the American Museum of Natural History is a series showing the three stages of *R. jacobeæ* from Buenos Aires. Burmeister has also given good colored drawings of the caterpillar of *R. hesperus*, *ethra*, *aurota*, *betis*, and *speculifer*.

In their early stages (1 and 2) the two genera are much alike, especially *R. orizaba* and *A. atlas*, but the freshly hatched larva of *Attacus* differs in having much longer tubercles. In the second stages the differences are still more pronounced. Now in the third stage, or with the second molt, as is well known, there is a great acceleration of characters, and the larva suddenly assumes the markings and armature of the last stages, with of course some important differences. From this time on the two genera, Asiatic and American, follow widely divergent paths. In the neogæic genus (*Rothschildia*) the tubercles tend to become reduced, becoming in the fully fed larva small and button-like, until in *R. betis* they have, judging from Burmeister's figure, become wholly atrophied.

In *Attacus*, however, after the second molt the tubercles become long and finger-shaped, while the spines have disappeared. This specialization is maintained through all the succeeding stages with the result that we have a very different larva from that of *Rothschildia*, the tubercles of the dorsum more especially being long, digitiform and somewhat pointed; it has also retained the long tubercle in front of each prothoracic spiracle, of which only the merest vestiges are present in *Rothschildia*.

The genus *Attacus* is evidently the end or terminal twig of a series of Attacine forms, as shown both in its larval and adult characters. The great size of the species is a feature of its specialization, just as the big mammals, such as the elephant, hippopotamus, and whales, are the result of extreme specialization due to their habits and surroundings.

Of the genus *Attacus* there are four species, inhabiting southeastern Asia, or the oriental region of arctogæa. Of these *A. atlas* appears to be probably the stem form, and occurs in Southern China (Macao and India). *A. crameri*, apparently the most extreme and recent form, inhabits Amboina, *A. cæsar* Mindanao, *A. atlas* var. *lorquinii* also the Philippines, and *A. imperator*, Bohot, one of the Philippine Islands; all these forms being local varieties resulting from local variation and isolation. The magnificent and very rare form, *Coscinocera*, Queensland (Tring Museum), Northern New Guinea, New

Ireland, which is a brown, tailed form, and seems to have diverged from *Attacus crameri*, or an earlier form, is an instance of the origin of a local genus, originating from some sport perhaps, becoming an island form of generic value.

The American genus *Rothschildia* is represented by fifteen species, most of which appear to be valid. They are confined to Central America and the forest regions of South America; none occurring on the Pacific coast of South America, in Chili, or in Patagonia. Two species (*R. jorulla* (*cinctus*), *R. orizaba*) cross into Arizona, and *R. erycina* (*Attacus splendidus* Beauv.) occurs in Texas.

It is worthy of notice that species of neither of these two genera occur in Africa, where, however, four species of *Philosamia* are found, while *P. cynthia* and its offshoots or local forms inhabit the Oriental Realm. With little doubt, however, *Callosamia* and *Philosamia* are on the whole more primitive forms, and the latter genus may have given rise to *Attacus*.

Notes on the Pupation of Vanessa Antiopa.

By W. L. W. Field, Milton, Mass.

I. Introductory.—Unusual climatic conditions during the spring and early summer of 1903 delayed the maturing of the first brood of *Vanessa antiopa*, and the larvæ of the second brood were consequently very late in appearing. In some localities the pupæ of the second brood were not formed until the middle of October. This belated transformation gave opportunity for some interesting observations upon the response of the insects to conditions of light and temperature encountered upon the bare walls of a building in the short days of mid-autumn. The main school building of Milton Academy is built of red brick with white stone trimmings, and faces nearly south. There are tall white columns at the entrance, and all the window casings are painted white. A row of elm trees and a dark green fence separate the school grounds from the street at this point.

II. Movements of the Larvæ.—Larvæ of *antiopa* began to leave the elm trees about October 1st. For two or three

days they appeared only in small numbers; but, by the end of the first week, the migration had begun in earnest. The larvæ were to be seen crawling along the paths, but always toward the front of the building. Reaching the vertical wall, they would climb upward until turned from this direction by a projecting course of brick or a window ledge. Anything of this sort, having a horizontal under surface exposed, seemed inviting to the larvæ, and many secured themselves for pupation in such situations.

It soon appeared, however, that the front of the building was not equally favored by the larvæ at all times. In the early forenoon the eastern end attracted them, and in the afternoon the slanting rays of the sun led a few late wanderers around the corner to the western wall. Most of these wanderers, however, ultimately returned to the front of the building. The few which pupated on the end wall chose brightly lighted situations, either on white-painted woodwork or directly against the vertical surface of a brick.

On the front of the building, at noon of a clear day, the heat and light were intense, and the larvæ observed there at such times were seen to seek the deep shade of the water-conductors in the angles of the basement wall. At other times, when the conditions were not so extreme, they suspended themselves in the broad daylight. Finding available situations on both bricks and woodwork, each larva appeared to make its choice with reference to the temperature of the air near the wall and the amount of sunshine.

No larvæ or pupæ were found upon the north wall at any time during the whole period. This may be largely due, of course, to the fact that this was the aspect of the building most distant from the elm trees.

Two or three larvæ sought the green fence, and pupated in the partly-shaded angles of that structure. I did not see these until pupation had been accomplished.

III. Colors of the Pupæ.—The experiments reported by Wood (1867), Poulton (1890) and others, showing that the colors of certain pupæ are determined by the colors of neighboring objects, are well known. Poulton has further shown

that the period of susceptibility is brief, and immediately precedes the act of pupation.

The pupæ which I had under observation nearly all showed this phenomenon to a marked degree. The whole number of larvæ which pupated successfully on the building and fence was 71. Of these, 29 were on white surfaces, and all formed pupæ of a pale ashen color; 34 were on red surfaces, and 32 formed pupæ conspicuously marked with brick red; 8 were on dark surfaces, all formed black or dark gray pupæ.

The exceptional cases were two in the second group, which were black. It is possible that with these individuals the period of susceptibility was reached during the night.

Of four larvæ taken from the building and kept in the laboratory, three, which were placed in light-tight wooden boxes, gave black pupæ; and one, which was kept in a white pasteboard box covered with glass, gave a pale ashen pupa.

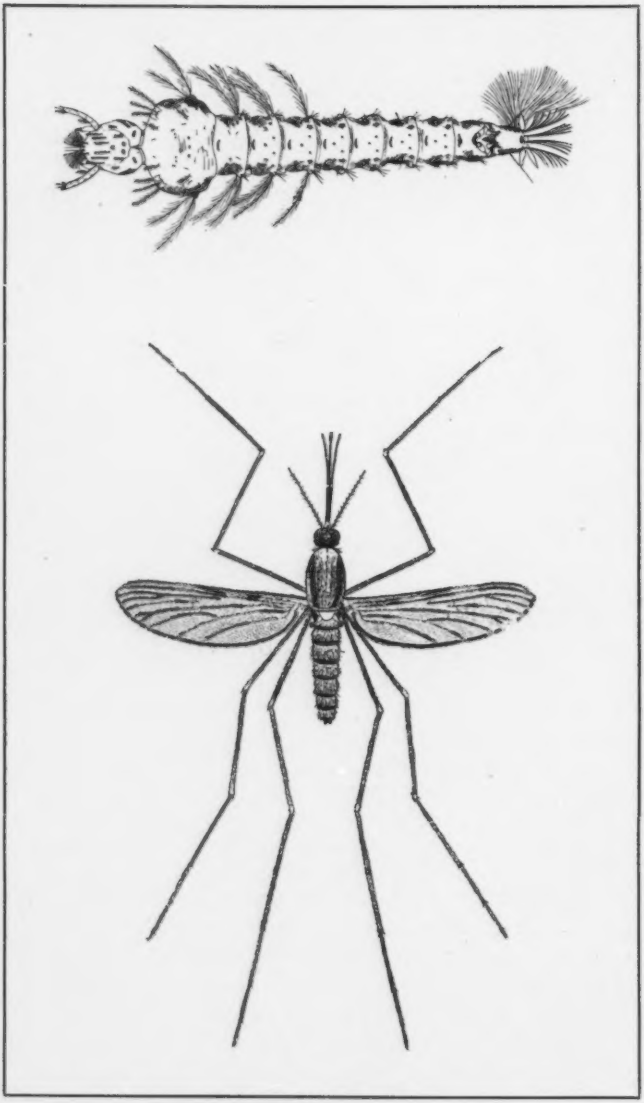
The three groups of pupæ were kept under observation until the butterflies emerged, to see if any significant difference in the duration of the pupal state appeared; but none was discovered.

CONCLUSION.—The larvæ of *Vanessa antiopa*, when about to pupate, react to light, heat, gravity and contact, as summarized:

LIGHT.—The larvæ give clear evidence of their preference for ordinary daylight over deep shade on the one hand, or the glare of reflected sunlight on the other. The reaction to light is secondary to the heat-reaction until the larva has suspended itself, when the period of greatest susceptibility to light begins.

HEAT.—A certain optimum temperature, apparently not far from 60° F., encouraged pupation in the most diverse situations. A much lower temperature drove the larvæ to sheltered nooks with southern exposure; a much higher one sent them into shaded spots.

GRAVITY AND CONTACT.—The responses to gravity are complex and at first somewhat obscure. The larvæ crawls down the trunk of the tree and up the front of the building. Favorable conditions of heat and light being found, contact stimuli probably lead it to spin its cushion of silk. Response



ANOPHELES FRANCISCANUS (LARVA.)

ANOPHELES FRANCISCANUS ♀.

to gravity is seen in the hanging position which the larva then assumes.

Valuable assistance in these observations was given by several of my pupils in Milton Academy.

REFERENCES.

Wood, T. W., 1867. Proc. Ent. Soc. Lond., pp. 99-101.
Poulton, E. B., 1890. The Colours of Animals.

Anopheles in California, with Description of a New Species.

By Isabel McCracken, Stanford University, Cal.

(With Plate II.)

In September, 1901, I began to look for individuals of the mosquito genus *Anopheles* in the vicinity of Stanford University. The University is situated near the base of the San Francisco peninsula, which is thirty-five miles long and about twenty-five miles broad at its base, and extends north and south between the Pacific Ocean and a long southern arm of the Bay of San Francisco. Running its full length about midway between ocean and bay is the Santa Cruz (or Sierra Morena) Range of mountains, the altitude of the crest being about 2,500 feet in the south, and only slowly decreasing in altitude toward the north. My collecting ground, in the vicinity of the villages of Menlo Park, Palo Alto, Mayfield and of the University, has been on the bay side of these mountains in the southern or basal portion of the peninsula.

The locality is not a malarial region. Several cases of malaria have been reported by resident physicians, but it appears, upon inquiry, that each patient so reported had either recently been away from the town or had recently come from a distance.

The various lakes, pools, streams and troughs in the neighborhood were visited continuously from September 5 to December 1, 1901, and again from March 1 to May 10, 1902, at intervals of a week or two.

Anopheles punctipennis and *Anopheles maculipennis* were found at various times and in various places, *A. maculipennis*

having the wider range and being more abundant in this limited area.

The following table gives the distribution, association and date of finding:

	Date	Species.	Locality	
1	Sept. 5 01	A. punc. L.	Francisquito Cr.	With Culex (species not identified.
2	" 7	" " L. & P	Flume	Abundance of Algæ.
3	" 12	" " "	Francisquito Cr.	Without Culex (opposite side of stream from 1.
4	" 19	" " & mac. L	"	A mile or so below where 1 and 3 were found.
5	" 19	A. mac. L & P	Pasturage Trough	With Culex incidens.
6	" 29	" " "	" "	A mile or so west of trough where 5 were found.
7	" 29	" " L	Flood Lake	With Culex tarsalis.
8	Oct. 5	A. punc. & mac. L	Pasturage Trough	Same as 6.
9	" 5	A. mac. L	" "	A mile or so east of trough where 5 were found.
10	" 5	" " L & P	" "	In a field on opposite side of road from 9.
11	" 6	" " L, P & E	Tank overflow	With Culex tarsalis.
12	" 6	A. punc. L & P	Francisquito Cr.	100 yds. or so above where 4 were found, in foul water.
13	" 12	A. punc. L & P	Los Francos Cr.	About a mile above where it enters Francisquito, with Dixa.
14	Nov. 1	" " L, P & E	Francisquito Cr.	About a mile above where it is joined by Los Trancos, with Dixa.
15	" 5	A. mac. L & P	Tank overflow	With Culex tarsalis and Dixa.
16	" 8	"	Felt Lake	With Dixa.
17	" 17	"	" "	" and Culex tarsalis.
18	Mar. 14 02	"	Tank overflow	Same as 11, with dragon-fly and beetle larvæ and tadpoles.
19	" 28	A. mac. L	Felt Lake	With dragon-fly larvæ
20	April 8	" " L & P	Roadside pool	Near where 9 were found last year--not so abundant—tadpoles.
21	" 8	" " L	Frenchman's Lake	
22	May 3	" " L & P	Felt Lake	

The collecting points were all within four miles north or south of the University, and within six and a half miles of each other. Felt Lake, the farthest point in one direction, is between 200 and 325 feet above sea level. It is a reservoir that lowers during the summer months below its outlet, but does not dry out entirely. Flood Lake, the farthest point in the opposite direction, is within a half-mile or so of tidewater and usually dries out during the summer months. *A. maculipennis* was found in both. The troughs visited contain water all the year round. The creeks frequently dry out during the summer months. The tank overflow has been permanent. Frenchman's Lake is a small reservoir that dries out.

At no time or place were the larvæ of either species very abundant. No adults were seen flying except on the evening of April 23, 1902, in the neighborhood of Francisquito Creek, in the willows and alders, when they were quite abundant.

The larvæ were, with one exception, found in comparatively clear water. On October 6, 1901, *A. punctipennis* was found in the creek, in very foul water.

On September 29th, 1901, a few full-sized larvæ and several pupæ were brought to the laboratory from Felt Lake. A few days later the adults issued, and proved to be an unidentified species.

This species was found continuously in small numbers at Felt Lake from October 5th to November 8th, 1901, invariably in company with *Dixa*, occasionally in company with *A. maculipennis*, and, on November 8th, with *Culex* eggs that later development proved to be those of a new species, *Culex kellogii* Th., recently described by Theobald (*Canadian Entomologist*, vol. xxxv, p. 211, August, '03).

In general appearance and habits, the larva of this new *Anopheles* is not unlike that of *maculipennis*, as described by Howard ("Mosquitoes," p. 103 *et seq.*), and in greater detail by Nuttall ("Studies in Relation to Malaria," *Jour. of Hygiene*, vol. 1, 1900, p. 51 *et seq.*)

In detail we find, in a fully-grown larva of this species, on the ventral surface of the thorax, three sets of lobes, bearing characteristic hairs: (*a*) a pair on the prothoracic part of the

thorax, bearing four stout, bristle-like, unbranched hairs, three of equal length and one half the length of these; (*b*) a pair on the meso-thoracic part of the thorax, bearing two stout, bristle-like, unbranched hairs, unequal in length; (*c*) a pair on the meta-thoracic part of the thorax, similar to, but shorter than those of *b*. These parts differ somewhat from corresponding parts in other species examined.

The pupa agrees in a general way with the pupa of *A. maculipennis* described by Dr. Nuttall, and with my own observations upon *A punctipennis*. There is to be observed, however, a difference in the character of certain hairs on the posterior lateral margins of the abdominal segments. In the species under observation, these are stout and simple on each segment from the second to the eighth, becoming branched on the eighth, agreeing in this particular with *A. maculipennis*, but not with *A. punctipennis*.

There is also a characteristic difference in the marginal teeth on the posterior fins. In the new species these are short and sharp, and appear in three longitudinal rows, the teeth decreasing in size postero-anteriorly.

It is in the adults, male and female, that the most characteristic difference between species is found, noticeably in the markings of the palpi, the setæ on the genital lobes of males, scales, and the markings of wings on both males and females.

The following is a description of the adult of the new species:

Anopheles Franciscanus n. sp.

Male.—Head dark brown, with short, dark, erect scales toward the nape, emarginate and slightly forked, vertex and anterior part of occiput with short, light brown scales not forked, a tuft of light brown hairs projecting forward between the eyes, a row of similar hairs projecting forward, encircling the eyes posteriorly; eyes deep purplish brown; antennæ about two-thirds length of palpi, yellowish-brown hairs, basal joint dark brown; palpi equalling proboscis in length with emarginate scales from base to tip on under and outer surfaces, those upon outer surface dark, upon under surface light, long light hairs covering distal third, becoming short and stout at

the apex; a light area at base of three distal segments, giving a slightly banded appearance; two distal joints spatulate, proboscis scaled except labella, labella covered with medium stout setæ, a few light hairs at apex.

Thorax: prothorax lobes dark; mesothorax dark brown at the sides, with scattered light hairs, a broad light brown patch in the middle; within this light area a median line and obscure lateral lines; scutellum light with single horizontal row of hairs; metanotum dark without hairs; halteres dark, covered with thick pubescene and emarginate scales; stalks light without scales.

Abdomen, basal area of each segment light, covered sparingly with long, light hairs; two stiff hairs on posterior margin of distal segment, stout hairs on margin of genital lobes.

Legs, coxa and trochanter light; trochanters, femora, tibiæ and tarsi covered with short, dark, emarginate scales and setæ; ungues of front legs very unequal, the larger one with a large median tooth and a smaller basal lobe; middle ungues curved, with blunt basal lobes; posterior ungues equal, simple; posterior metatarsus slightly longer than tibia.

Wings with dark costa, with two distinct, nearly equal, yellow spots—one at distal end of sub-costal vein, one at and involving distal end of first long vein; fringe dark, with a yellow spot at the end of each vein except at the end of the sixth; the first spot carried on to the first long vein, the apical spot carried past over long vein on to the upper branch of the second long vein; the second long vein dark except for a few basal light scales; third long vein yellow in the middle, dark at the base and apex; light area at base of third long vein carried over the fourth on to the upper branch of the fifth, with a few light scales at base; main branch of fifth long vein light, except at base and apex; distal half of sixth long vein dark, except at apex, basal half light; sub-costal with a light spot carried to the the first long vein; (in one specimen the light spot on sub-costal missing); third long vein prolonged slightly into the basal cell; first sub-marginal cell longer and slightly narrower than second posterior cell, stem twice the length of the cell; stem of second posterior cell prolonged to base of

wing; supernumerary cross vein adjacent to or but very shortly removed from mid cross-vein and equal to it in length when removed nearer to apex of wing; posterior cross-vein a little longer than mid cross-vein and varying in distance from it from one-half to almost twice its own length; third long vein prolonged slightly into the basal cell, darkest scales on costal, sub-costal and first long veins.

Palpi of the female equalling proboscis in length, light area at base of three distal segments, giving a banded appearance, clothed with scales, short hairs and setæ as in male, distal joints not spatulate; legs with the ungues equal; otherwise agreeing with the male.

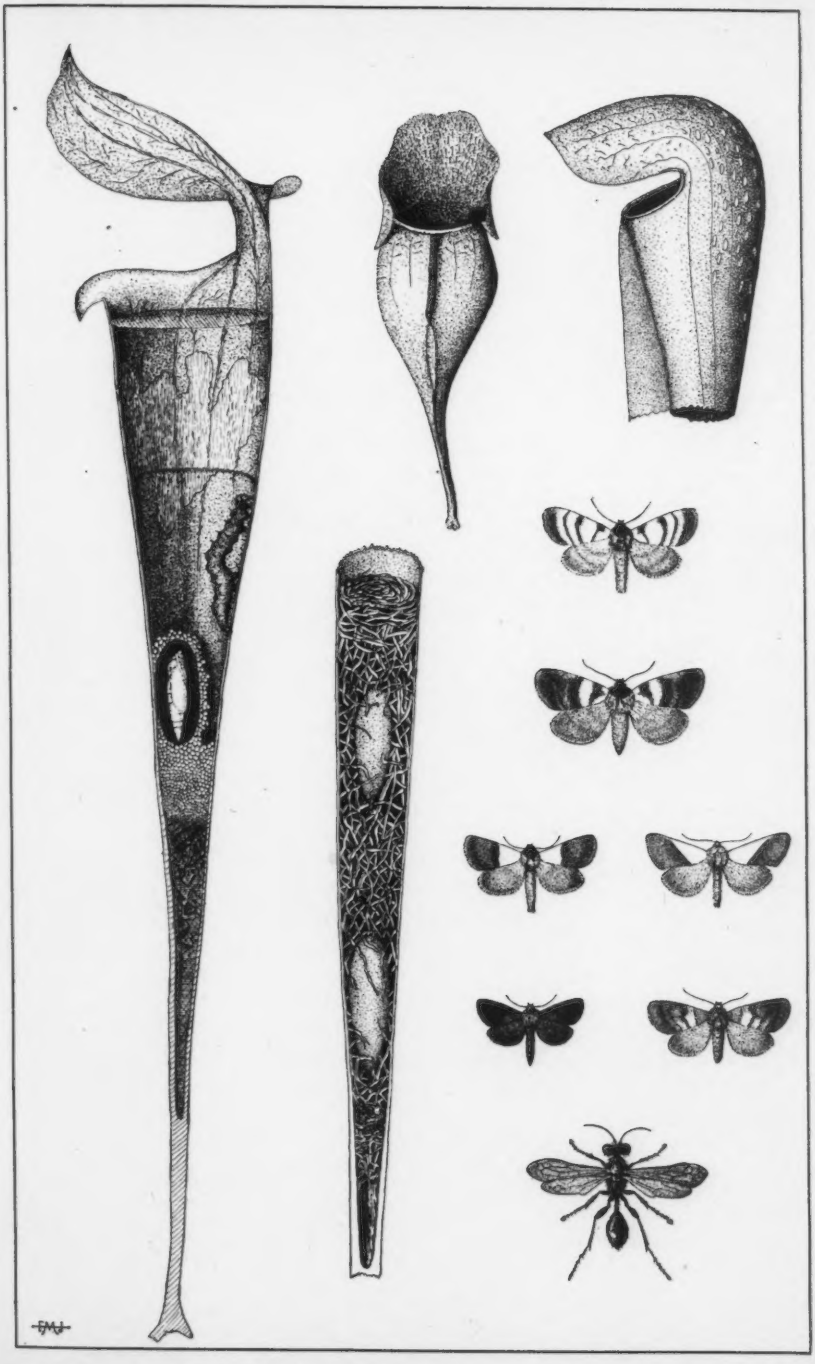
This paper was prepared in the Entomological Laboratory of Stanford University, under the direction of Prof. V. L. Kellogg.

Pitcher-Plant Insects.

By Frank Morton Jones, Wilmington, Del.

(Plates III, IV.)

In the rolling sandy country characteristic of the south-central portion of North Carolina, *Sarracenia flava*, the pitcher plant known locally as "fly-catcher" or "trumpets," grows to perfection. Great clumps of its greenish-yellow foliage fringe the ponds or occupy springy places on the slopes and in the hollows. Sometimes single leaves reach a height of more than three feet, but even in favorable situations the average height of the mature and well-developed leaves is not more than twenty-six inches. In August, most of the leaves are tough and mature, their secretion of nectar as a bait for insects seems to have ceased, and evidently the most active period for the capture of insects is over for the year; so that by gathering an armload of the larger leaves and carrying them to some drier, shadier spot for examination at leisure, we may get a very fair idea of the season's catch. The wide upper portion of the tube is usually empty, but on cutting down to where it narrows we soon come to the more recent victims, and some interesting moths in fairly good condition were secured in this way. *Agrotis ypsilon* was the largest living moth observed. Not infrequently two or three large beetles would be found,



PITCHER PLANT INSECTS (JONES).

tumbling over one another in fruitless efforts to climb the smooth walls, which sometimes bore evidence that a strong-jawed victim had vainly endeavored to eat his way out through the leaf.

Below the dead and dying captives of recent date are usually several inches of insect remains, the upper portion of the mass dry and showing little trace of the action of the liquid secretion of the plant. Only one butterfly, *Pyrameis cardui*, was recognized; but moths in great numbers and variety make up a large portion of the mass. *Catocala paleogama*, a small sphinx-moth and many Noctuidæ of smaller size were noted. Of other orders Coleoptera probably predominated, the upper portion of the mass containing many entire beetles and the lower portion being well studded with the horny legs and elytra of others more completely digested. Hymenoptera, Diptera and Orthoptera were all well represented, the latter order by a large green katydid and several specimens of *Dissosteira carolina*, with other smaller species.

Further down in the tube the remains become more and more fragmentary, the lower portion consisting of a gray, vile-smelling, semi-liquid mass of decaying material, with only here and there a trace of the hardest part of some insect; and here almost invariably are to be found one or more larvæ of the fly, *Sarcophaga sarraceniæ*, which Riley described in 1874 from specimens bred from *Sarracenia variolaris*.

If we walk through a clump of *S. flava* and bend up the hoods or covers as we pass, here and there we will find, sitting with folded wings in the pitchers, one, sometimes a pair of little moths. Attempting to frighten them out, they respond by backing further into the tube, which may be carried about almost indefinitely and handled very roughly before the little moth can be persuaded to leave its shelter. Once dislodged it flies quickly to another pitcher, alights outside near the rim, and runs in over the edge. A collection of these little moths from *S. flava* shows them to be of at least three species. The largest and most abundant of these, *Exyra ridingsii* (Plate IV), was described by Riley in 1874 from specimens captured in Alabama. It varies much in the proportion of black

and dull straw-yellow markings; of a series of twenty, the uppermost figure on Plate III shows the lightest, and directly below this the darkest specimen. Below these is shown the second and much less abundant species, *Exyra semicrocea Gn.*, side by side with *Xanthoptera semiflava Gn.*, with which it has been confused in some collections, the colors and pattern being almost identical; but *semicrocea* is readily distinguishable by its brownish-black head, collar and front of thorax, and by the direction of the line separating the yellow and black areas on the primaries. The third species, the lower pair illustrated on Plate III, has been identified for me by Dr. Dyar as *Exyra rolandiana Grt.* The smaller examples with blackish wings relieved by only a few red scales, approach *E. fax;* and the larger paler specimens exhibit varying proportions of yellow, purplish-red, and smoky-black.

To what extent the larvæ of these three species of *Exyra* have *S. flava* as their foodplant, the few hours spent among the plants was not sufficient to determine. The small pitcher-plant, *S. purpurea* (Plate III, middle figure) grew abundantly close at hand; some of its leaves showed evidence of feeding, and it is known to be the foodplant of *rolandiana*. All the larvæ observed in *flava* seemed to be of one species, and a small number of moths bred from this plant all proved to be *Exyra ridingsii*. The general appearance of the larva is shown on Plate III. When full grown it is brownish-maroon in color; head pale brown with darker band and spots; feet black; the larger tubercles spine-like, bearing fine hairs.

The young larva spins a fine silken net like a cobweb, closing the mouth of the pitcher. This web is often absent, sometimes ruptured and not repaired. Below this web the larva feeds on the inner surface of the leaf, moving about on a carpet of silk, and leaving the outer wall of the leaf intact. Soon its sawdust-like droppings effectually plug the small end of the pitcher, and this rapidly accumulating mass of cork-like fragments precludes the possibility of any danger to the caterpillar from the secretions or trap-like structure of the plant. Before spinning its cocoon the larva sometimes cuts a straight narrow groove around the pitcher, causing the upper

PITCHER PLANT INSECTS (JONES).

third to collapse and topple over, thus effectually closing the mouth of the tube. This habit was not noticed in time to ascertain how general it is, but the straightness of the groove and the evident care exercised to make this girdling operation complete, is not exaggerated in the drawing on Plate III. The cocoon is flimsily constructed, either in or just above the corky frass which fills the tube for several inches. The pupa is pale amber-brown, the colors and markings of the moth showing through before emergence. It is worthy of note that both Prof. Riley and Dr. Mellichamp describe the larva of *E. semicrocea* as closing the mouth of *S. variolaris* (Plate III, right hand figure) by fastening down the hood of the pitcher with silk, no trace of which habit was observed in *S. flava*.

Of *S. sarraceniæ* and *E. semicrocea* in relation to *Sarracenia variolaris*, Riley says: "These two insects are the only species of any size that can invade the death-dealing trap with impunity, while the leaf is in full vigor." At least one other insect makes its home in *S. flava*, however; for of some hundreds of leaves cut open, four or five contained the nest of a solitary wasp. In each case the wasp had plugged the bottom of the tube, usually with fine dry grass,—in one instance with sphagnum moss; the three to five cells were divided by loosely packed masses of the same material, and the top closed with a tightly packed wad. The cells of one nest were packed with freshly gathered tree-crickets (*Œcanthus*), and in the one instance where the builder could be identified this proved to be *Isodontia philadelphicus Lep.* (Plate III, nest and wasp).

The above observations are the result of a few hours spent among the pitcher-plants of Richmond County, North Carolina, in the month of August. Anyone who has opportunity to observe them throughout the season, and especially in the early spring, would doubtless make many interesting discoveries in regard to these most curious plants and their insect visitors and victims. There is a problem for someone to work out in regard to the relation between the plants and certain ants whose colonies adjoin them, and there is a great deal more to be added to these necessarily fragmentary notes.

Description of the type of the genus Curriea Ashm.

By William H. Ashmead, M. A., D. Sc.

The genus *Curriea* was characterized in my generic table of the tribe *Braconini* in my Classification of the Ichneumon-Flies, in the Proceedings of the United States Museum, vol. xxiii, 1900, p. 137, upon a unique specimen collected by Mr. Rolla P. Currie, in 1897, in Liberia, Africa.

The genus is easily recognized by the very large eyes, which occupy the whole sides of the head, extend to the base of the mandibles, and are emarginate within opposite the insertion of the antennæ. It is the only genus, falling in the subfamily *Braconinæ* with emarginated eyes. Below I give a figure and description of the type.

Curriea fasciatipennis new species.

♀.—Length 7 mm.; expanse of wings 18 mm.; ovipositor longer than half the length of the abdomen. Uniformly brownish yellow, polished, impunctate, the eyes and the sheaths of the ovipositor, black; wings yellowish-hyaline, with three transverse fuscous bands, the first across from the parastigma, the second across from the extreme apex of the stigma, the third at the apical margin and connected with the second by a fuscous streak along the front and hind margins of the wing; the hind wings have their apices fuscous: the costal vein, the parastigma, the post marginal vein except at apex, and the median vein, are fuscous, while the stigma and internal veins are yellow. The abdomen is shaped as in *Melanobracon;* the first segment has a deep furrow at each side, leaving a lanceolate elevation on the disk; the second segment has a triangular elevation at basal middle, with a depression on either side, the depressions with elevated lines; the third and the following segments are smooth, with the extreme apical margins rimmed, the third being separated from the second by a crenulate furrow.

Type.—Cat. No. 7320, U. S. N. M.

Mount Coffee, Liberia. Described from a single specimen taken by Mr. Rolla P. Currie, in honor of whom the genus was named.

DESTRUCTIVE BEETLES (MELANDER).

Destructive Beetles: A Note on Landscape Gardening.

By A. L. Melander, Chicago.

(Plate V.)

The group of inland lakes feeding the Fox River in northern Illinois has lately sprung into popularity. Pistakee Bay is one of these pleasure resorts where the busy people of Chicago find a summer's recreation. During the times of its inhabitation by the Indians the region about this picturesque spot had become thickly studded with a forest of oaks and hickory extending far inward. The advent of the pioneer farmer in 1825 necessitated the clearance of the oak forest, but for practical, if not for aesthetic reasons a narrow fringe of timber was left outlining the rolling gravel banks along the shore. Twenty years ago sportsmen from Chicago discovered this retreat and advertised its popularity.

The wooded shore line, which had been regarded as useless farm land was surveyed and the lots found ready purchasers. One of the first who chanced upon this delightful place was especially assiduous in introducing "improvements," which consisted chiefly in keeping the grass cropped and free from fallen autumn leaves.

All went well until about five years ago. Then the twigs clipped by *Elaphidion villosum* became especially numerous. *Orthosoma*, *Clytus* and Saperdas flew nightly to the lighted windows. The shelf-fungus, *Polyporus*, started growing on some of the grander old oaks, and suddenly the fact was noticed that the prided trees were better in a wood-pile. The accompanying photograph clearly shows their condition at the time.

Why should not the dying trees have included the neighbors? A line of dead trunks practically marked the limits of the property under notice, while on either side the trees were still flourishing. The contour of the land will help to answer this question. The lots mentioned were selected on account of their wooded hills. On either side the land lies low, mucky from the drainage of the higher ground. This conformation manifests itself also in the character of the trees: in the lowlands the oaks are magnificient, higher the hickories appear. This difference in elevation, although less than twenty-five

feet, causes corresponding differences in vegetation striking enough to be classed almost as mesophytic and xerophytic.

Nature had long ago distributed her trees so that the leaves of the past year helped to grow those of the present, readjusting any unbalance caused by a deficit in the food-material of the soil. Mans' improvements, grass-cutting and leaf-raking, naturally impoverished the soil rendering the incipient xerophytic hill a poor producer. The trees were slowly starved, and in their weakened condition succumbed to the attacks of their insect foes. On the other hand the healthy trees of the lowland were able to withstand the depredations of fungi and boring insects, which probably would have had no incentive for attacking them.

A word of suggestion to similar land owners may be given. If these trees had been kept in health by artificial fertilization possibly they could have withstood the leaf-raking. To replace the abstracted nourishment trenches could have been dug around the trees to be filled with manure or other suitable food at the close of each season. Had this been done the trees would probably have been preserved more effectually than by waging war on the insect foes.

LIST OF THE PRINCIPAL BEETLES INFESTING THE TREES.

Bark-beetles and fungus feeders.
Hister Lecontei Mars.
Ips quadriguttatus Fabr.
Tenebrioides mauritanica Linn.
Pyrochroa flabellata Fab.
Boletophagus bifurca.
Wood-borers.
Melanotus communis Gyll.
Melanotus decumanus Er.
Melanotus fissilis Say.
Dicerca divaricata Say.
Dicerca asperata Lap & Gory.
Melanophila drummondi Kirby.
Chrysobothris femorata Fab.
Chrysobothris azurea Lec.
Lucanus dama Thunb.
Orthosoma brunneum Forst.
Elaphidion villosum Fabr.
Elaphidion mucronatum Fabr.
Eburia quadrigeminata Say.
Xylotrechus colonus Fabr.
Urographis fasciatus Deg.
Alobates pennsylvanica Deg.
Merinus laevis Oliv.
Xylopinus saperdioides Oliv.
Tenebrio tenebrioides Beauv.
Diaporus hydni Linn.
Meracantha contracta Beauv.
Scotobates calcaratus Fabr.
Platydema subcostatum Lab.

Tenebrio and *Alobates* outnumbered the others, and at the time of emergence could be found by dozens under the loosened bark. The presence of so many wood-borers attracted numbers of parasitic insects, especially ichneumons and Braconids. The wasp *Cerceris* was also noticed, possibly searching like its European relatives for the Buprestidæ.

Two New Species of the Bee Genus Perdita from Indiana and New Jersey.

By Henry L. Viereck.

Perdita gerhardi n. sp.

My friend Mr. Wm. J. Gerhard recently sent me specimens (four ♀ and two ♂) of a little bee with the observation "They were taken on or hovering over *Monarda punctata*." Their color is much like the hue of the bracts and corolla of the flower they visit. My finding this little bee undescribed prompted me to determine a species I had taken in New Jersey on the same flower—this likewise proved to be an undescribed species.

I sent a specimen of *P. gerhardi* to Prof. Cockerell who kindly sent a table of allied forms.

P. gerhardi has characters of *Philoxanthus* Ashmead and *Perditella* Ckll. Length of female 5.5 mm.

Color.—Bright yellow with brownish tinge; scape, head, dorsulum, pleura and legs with a ferruginous tinge; greater part of flagellum, spot mesad of each fovea, foveæ, spot on lower third of mesopleura, tarsi of posterior legs and posterior margin of femora of last pair of legs black or blackish. Margins (posterior) of first three dorsal segments of abdomen blackish. Wings pale yellowish, stigma pale yellow, nervures brownish.

Head very finely granulose. Clypeus and sides of face adjoining with sparse indistinct punctures. *Fovea on front extending from a little below the supraorbital line, nearly to the level of the insertion of antennæ, close to the eye margins and shallow. Face distinctly quadrate. Clypeus truncate. Labrum nearly twice as wide as high,* V *on anterior margin.* Clypeus semicircular at base. *Space between anterior and lateral ocelli about one-half the distance between posterior ocelli;* distance between posterior ocelli a little greater than that between them and nearest eye margin. *No malar space. Cheeks narrow and rounded.* Scape cylindrical as long as or a little longer than first four joints of flagellum; *pedicellum broader than and longer or about equal to the first joint of the flagellum; joints of flagellum subequal. Maxillary palpi six jointed, joints subequal, labial palpi four jointed, first joint nearly twice the length of the other joints fused.* Each side of face with a shallow pit near the insertion of antennæ.

Thorax.—Dorsulum dullish, finely granular, with sparse indistinct punctures and *a median impressed line extending from the anterior margin to near the middle. Tegulæ more shining than dorsulum,* rest of the thorax (except metathorax posteriorly which is more shining) sculptured nearly like dorsulum. *Posterior face of metathorax with*

a slight median line on the upper half and a narrow median line or rather impression on lower half. Metatarsus as long as the other joints fused. Claws cleft, the tooth distinctly shorter than the claw. *Transverse median nervure received by the median cell about one-fourth mm. basad of the basal nervure; first and second recurrent nervures interstitial or nearly i. e. a little basad of interstitial with (but with no space whatever between) the transverse cubili.* Area of marginal cell about equal to second cubital; *stigma at least four times as long as high and a little longer than the marginal cell,* distance between stigma and insertion of first transverse cubitus in the marginal nervure about equal to the width of the truncation in the latter; second division of radius longer than the first, third longer than second, about as long as first plus second.

Abdomen.—Sculpture much like that of dorsulum; segments depressed along posterior margin, more in the middle than on the side. Pygidial plate flat, shining, triangular, narrowly but deeply emarginate at apex forming a w.

♂ Length 5 mm. Much like the other sex except in color. Frontal foveæ a dot. With exception of some blackish sutures, spot on mesopleuræ, spot on face mesad of fovea and dark tubercles, yellow. Wings as in the female, but the recurrent nervures instead of being inserted slightly basad of transverse cubiti are slightly beyond interstitial.

Type locality of *gerhardi* East Chicago, Indiana.

Prof. Cockerell's table of the Yellow species of Perdita is as follows:

"About 4 mm. long, cheeks of ♂ armed with a stout spine. 1
Larger, about 6 mm. or over, cheeks of ♂ not armed. 2
1 Head very large . . . . . **larreæ** Ckll.
Head not nearly so large . . . . . **larreæ var. modesta** Ckll.
2 8 mm. long, mesothorax pubescent, pleura with a black patch **beata** Ckll.
Smaller about 6 mm. long 3
3 Very pale yellow. 4
Bright yellow 5
4 Pleura with a black patch . . . . . **wootonæ** Ckll.
Pleura without a black patch . . . . . **perpallida** Ckll.
5 Pleura with a black patch, mesothorax hairy; abdomen without *distinct* black bands . . . . . **gerhardi** Vier.
Pleura without a black patch 6
6 Abdomen with four narrow black bands . **howardi** Ckll. (flies in spring.)
Abdomen without such bands . . . . . **luteola** Ckll. (flies in fall.)"

Perdita monardæ n. sp.

Type locality, Riverton, New Jersey.

♀ Length 6 mm. The characters in italics in the preceding species occur in this one too.

Head as broad or a little broader than thorax, very finely granulose, dull; clypeus a little pointed medially on the anterior margin, at base. Distance between posterior ocelli distinctly less than that between them and nearest eye margin. Scape cylindrical, equal to or a little longer than first five joints of flagellum fused; face rather flat, no shallow pits. Rest of the insect sculptured like head, metathorax and abdomen inclining to shiny. Posterior face of metathorax at base with a shallow pit. Claws simple. Area of marginal cell greater than the area of the second cubital. Distance between stigma and insertion of first transverse cubitus on the radial nervure greater than the width of the truncation, second division of the radius shorter than the first, third division nearly equal to the first plus the second.

Color.—Dark metallic green, face with white and bronzy black marks, the bronzy black marks on the clypeus and supraclypeal mark; scape and flagellum yellow below, blackish above. A short line at base of posterior orbits, spot at base of mandibles, line from corner of pronotum to tubercles, tubercles, tegulæ and a spot on lower half of mesopleura whitish. Labrum and mandibles yellowish to ferruginous. Legs yellow except femora, four anterior tibiæ on posterior surface and posterior pair of tibiæ and legs which are dark brown to black. Abdomen colored like the legs *i. e.* yellow and black or dark brown, venter yellowish marked with brown.

♂ Length 4 mm. Claws cleft, otherwise like the other sex in structure and sculpture. Color pattern like that of the female, less black on the face, no broad suture of black between the dog ear marks and adjoining parts; supraclypeal mark and upper edge of lateral face marks yellow, below all is whitish, two small black spots on clypeus, tip of mandible brownish; about one-half of the cheek yellow. Scape in front and flagellum beneath yellow, scape on posterior surface and flagellum above dark brown to black. An interrupted band on pronotum, tubercles, greater part of propleura, large mark on mesopleura, tegulæ, base of wings, greater part of metapleura and legs (excepting stripe on femora and tibiæ, and tarsi of posterior pair of legs which are dark brown) bright yellow. Pale color pattern corresponds to that in the female, apex of fifth segment, all of sixth and entire venter brownish yellow. Apex of abdomen an acute angle, brownish testaceous. Wings pale, nervures pale brown, stigma nearly as pale as the membrane of the wing. Recurrent nervures interstitial.

Judging from the series of both species (*gerhardi* 4 ♀ ♀ 2 ♂ ♂, *monardæ* 7 ♀ ♀ 28 ♂ ♂) one is lead to believe them very constant in every way. *Monardæ* has the dog ear marks absent more often than present, the pleural marks vary in size

but do not disappear; the abdominal marks are contiguous with the base of the segments, thus leaving a dark space between themselves and the apical margin.

Monardæ differs from *Cockerellia* Ashmead in having all claws of the male cleft. Both species are thinly pubescent with whitish hair. *Monardæ* was captured August 11, 1901, by the writer, the species being abundant at the flowers of *Monarda punctata*. *Gerhardi* was taken August 28, 1903 *Perdita octomaculata*, Say, was taken on *Aster*, Big Timber Creek, New Jersey, September 22, 1901, and on *Solidago*, Lawndale, Pennsylvania, September 15, 1901, by the writer,

Southwestern Geographical Names.

By T. D. A. Cockerell

I have lately received two very excellent papers—one by Mr. O. A. Johannsen, on Aquatic Nematocerous Diptera, and the other, by Mr. A. L. Melander, on Mutillidæ—both containing erroneous interpretations of Spanish-American geographical names. I would not offer any criticism at this time, were it not that the errors are by no means new, the literature of American entomology being scattered with them, so it becomes necessary to present some sort of a protest.

(1) Arroyo. This is the name universally used in the southwest for a dry watercourse; that is, one which is occupied by water only after heavy storms. Professor Townsend collected a large number of insects in an arroyo near La Luz and Tularosa, New Mexico; and the records of these are getting into the literature. In a paper of mine in the Annals and Magazine of Natural History, the word arroyo is followed by a comma, which was not in my MS., the printer evidently thinking it the name of a town. But in Mr. Melander's Mutillidæ paper I am horrified to see numerous species reported from a place designated "Arrogo, New Mexico"! This paper has several other names of localities spelled wrongly; but this is the characteristically persistent error.

(2) Baja California. "Baja, a place in California," has

long been celebrated in our literature. One might as well write of "New, a place in England." Baja California is Lower California, and is in Mexico. Because of this misunderstanding, Mr. Johannsen introduces *Simulium cinerium* erroneously as a species of the United States. Both this and *S. tamaulipense* (alleged to be from Texas) are exclusively Mexican so far as records exist.

Both Messrs. Melander and Johannsen write C. H. Townsend for C. H. T. Townsend. The error is a serious one, as C. H. Townsend is also a distinguished naturalist, and an entirely different person.

Sending Insects Through the Mails.

By L. O. Howard.

While there has been a very general exchange of cabinet specimens of insects by means of the United States mails, and while people have sent to the State Entomologists and to the government Entomologists living specimens with supplies of food, Section 494 of the Postal Laws and Regulations (page 226) specifically excludes insects from the mails, The enforcement of this regulation by a southern postmaster recently caused Mr. Wilmon Newell, State Entomologist of Georgia, to urge me to inform him accurately as to the attitude of the Post Office Department on this subject. I therefore prepared for the signature of the Honorable Secretary of Agriculture, a letter addressed to the Postmaster General asking for a modification of this section on the ground that its enforcement would hamper the work of the Department of Agriculture, and would cause serious inconvenience to entomologists all through the country. The Postmaster General replied promptly and wisely, and courteously agreed to the suggestion of Secretary Wilson, and urged that a representative of the Department of Agriculture be appointed to discuss any proposed amendment with the Superintendent of the Railway Mail Service. I was designated to act for the Secretary of Agriculture, and after consultation with Mr. Alexander Grant, Assistant General Superintendent of the Railway Mail Ser-

vice, the following order was prepared and was issued by the Postmaster General.

"*Office of the Postmaster General,*
Washington D. C., Dec. 16, 1903.

Order No. 1269a.

Modify the Postal Laws and Regulations, edition of 1902, as follows:

Section 491, paragraph 1, line 3; omit the word "insects."

Section 496: Omit paragraph 7 and insert in lieu thereof the following:

7. Queen bees and their attendant bees, the "Australian lady bird," insects (live or dried), and dried reptiles may be sent in the mails when so put up as to render it practically impossible that the package shall be broken in transit, the persons of those handling the mails injured, or the mail bags or their contents soiled. (See paragraph 1 of this Section.)

H. C. PAYNE, Postmaster General."

Knowing that this order will be of wide interest to entomologists, I trust that this communication will be published in ENTOMOLOGICAL NEWS.

List of the Cicindelidae of North Carolina, with Notes on the Species.

BY FRANKLIN SHERMAN, JR., Entomologist N. C. Dept. Agriculture, Raleigh.

In the Canadian Entomologist for August, 1902 (vol. xxxiv, p. 217), Mr. Edward D. Harris has a paper entitled "Notes on Cicindelidæ in North Carolina," in which he mentions six species and varieties; and this has stood alone, so far as I am able to learn, as a contribution to our knowledge of this family in North Carolina. The present paper is intended to be complete so far as it has been in the power of the writer to make it so, and is based largely on collections made in various parts of the State in the last two years. All actual captures of unquestionable authenticity of which I can find positive record, are

included, but no place has been given to doubtful or "probable" species. We have specimens of most of the species and varieties enumerated, as mentioned in the text.

The determinations have been made by Mr. E. A. Schwarz of the National Museum and Mr. Charles W. Leng of New York City, to both of whom thanks are due. The nomenclature adopted is that of Mr. Leng in his "Revision of the Cicindelidæ of North America."

In this list "Hen. No. —" refers to the numbers given to the corresponding species in Mr. Samuel Henshaw's "List of the Coleoptera of North America." The *letters* in parenthesis (E, NE, etc.), immediately after the name of a locality, denote its general position in the State, as east, northeast, etc.

1. **Tetracha carolina** Linn. Hen. No. 12.

Only records are from east central part of the State. Specimens in N. C. Dept. Agr. Collection.

Raleigh (E. C.) July 1900, C. S. Brimley. July 26, 1901, F. Sherman. July–Aug., 1902, frequent on pavements under electric lights; F. Sherman. July–Aug., 1902, common under stones in garden; C. S. Brimley.

Princeton (E. C.) July 28, 1902, F. Sherman.

2. **Tetracha virginica** Linn. Hen. No. 13.

Only records are from east central part of State. Specimens in N. Car. Dept. Agr. Collection.

Raleigh (E. C.). July 8, 1902, under board in sod orchard; F. Sherman. July 8–Aug. 16, 1902, eleven specimens under stones in garden; C. S. Brimley.

Smithfield (E. C.) July 30, 1902, under board near river bank; F. Sherman.

3. **Cicindela unipunctata** Fab. Hen. No. 17.

Only records are from western part of State. One specimen from collection of Morrison in N. C. Dept. Agr. Collection; others in U. S. Nat. Mus. Collection.

Retreat (W.), June 8 (yr.?), Hubbard and Schwarz.

Mountain roads (W.), Morrison, Blanchard.

4. **Cicindela scutellaris** var **unicolor** Dej. Hen. No. 19a.

Only records are from southeastern part of State. Specimens in N. C. Dept. Agr. Collection.

Southern Pines (S. E.), Mch, 1901 ; common on sandy soil near pine woods ; F. Sherman.

Montague (S.E.), early May, 1902, E. D. Harris.

Wilmington (S.E.), Wenzel.

4a. Var. **modesta** Dej. Hen. No. 19c.

Only record is from eastern part of State.

Goldsboro (E.), early May, 1902, in road ; E. D. Harris.

4b. Var. **rugifrons** Dej. Hen. No. 19d

Only record is from east central part of State. Specimens in N. C. Dept. Agr. Collection.

Raleigh (E. C.) Sept. 11, 1902, C. S. Brimley.

5. **Cicindela sexguttata** Fab. Hen. No. 24.

All records from central and eastern parts of State. Specimens in N. C. Dept. Collection.

High Point (C.), early May, 1902, E. D. Harris.

Jamestown (C.), early May, 1902 ; along paths in woods near river ; E. D. Harris.

Chapel Hill (C.) Apr. 4, 1888, G. F. Atkinson.

Maxton (S.E.) May 5, 1901 ; common on banks of ditch in pine woods ; F. Sherman.

Garysburg (N.E.), Apr. 7, 1902 ; under loose bark of fallen tree ; F. Sherman.

Goldsboro (E.) early May, 1902, in woods ; E. D. Harris.

5a. var. **harrissii** Leng. Hen. not listed.

Only record is from western part of State.

Mountain Roads. (W) Beutenmüller.

6. Cicindela patruela Dej.—Hen. No. 24 b.

Only records are from western part of state. Specimens in N. C. Dept. Agr. Collection.

Blowing Rock, (W.) June 27, 1901. Not rare along paths at 4,000 ft. elevation. F. Sherman.

Spruce pine, (W.) Sept. 24, 1902, about 2,000 ft. elevation. F. Sherman.

"*Mountain roads*" (W.) Beutenmüller. Morrison.

7. Cicindela purpurea Oliv.—Hen. No. 25.

Only record is from high mountain elevation in western part of state. Specimens in N. C. Dept. Agr. Collection.

Blowing Rock, (W.) Aug. 15, 1902. Common along path through pasture at 4,000 ft. elevation. F. Sherman.

8. Cincindela splendida Hentz.—Hen. No. 25, i.

Only definite record from mountains in western part of state. Specimens in N. C. Dept. Agr. Collection.

Homestead, (W.) Sept 11, 1902. Roadside, very active and shy. F. Sherman. "*N. C.*" Morrison.

9. Cicindela vulgaris Say.—Hen. No. 32.

Evidently throughout the state. Specimens in N. C. Dept. Agr. Collection.

Raleigh, (E. C.) Sept. 26, 1900, Oct. 1900, May 17, 1901, Mar. 29, 1902, Apr. 7. F. Sherman.

Montague, (S. E.) Early May, 1902 (specimens of typical size.) E. D. Harris.

Goldsboro, (E.) Early May, 1902 (Dwarf form.) E. D. Harris.

Hamlet, (S. E.) Early May, 1902 (Typical.) E. D. Harris.

Southern Pines, (S. E.) Oct. 15, 1900, Mch. 1901. F. Sherman.

Jamestown, (C.) Early May, 1902, (Typical) on banks of Deep River. E. D. Harris.

High Point, (C.) Early May, 1902 (Dwarf.) E. D. Harris.

Charlotte, (C.) Early May, 1902, abundant (dwarf) along creek. E. D. Harris. Apr. 25, 1902. F. Sherman.

Burnsville, (W.) Oct. 3, 1902. F. Sherman.

Blowing Rock, (W.) Aug. 29, 1902. F. Sherman.

10. Cicindela repanda Dej —Hen. No. 33.

Abundant near water. Probably throughout the state, though all records but one are from central and western parts of state. Specimens in N. C. Dept. Agr. Collection.

Hamlet, (S. E.) Early May, 1902. E. D. Harris.

Raleigh, (E. C.) Oct. 1900. Abundant on sand near stream. F. Sherman. July, 1902, common. F. Sherman. Oct. 26,

1902. Numbers found under about ½ in. of sand on bank of stream, perhaps hibernating. F. Sherman.

Jamestown, (C.) Early May, 1902, abundant on banks of Deep River. E. D. Harris.

High Point, (C.) Early May, 1902. E. D. Harris.

Charlotte, (C.) Early May, 1902, on banks of stream—"in unusual range of size." E. D. Harris.

Old Fort, (W.) Sept. 9, 1902, common near stream. F. Sherman.

Whittier, (W.) Sept. 1902, common near stream. F. Sherman.

Linville, (W.) Aug. 1902, common near stream at about 3,000 ft. elevation. F. Sherman.

11. Cicindela 12-guttata Dej.—Hen. No. 33 c.

Probably throughout the state, though all records are from Raleigh to westward. Specimens in N. C. Dept. Agr. Collection.

Raleigh, (E.C.) Sept 1900, Oct. 1, 1900, Apr. 5, 1901. F. Sherman. Oct. 26, 1902, found under about ½ in. of sand on bank of small stream, perhaps hibernating. F. Sherman.

Snow Camp, (C.) Aug. 22, 1902. F. Sherman.

Oakdale, (C.) Aug. 22, 1902. F. Sherman.

Jamestown, (C.) Early May, 1902. Banks of Deep River. E. D. Harris.

Charlotte, (C.) Early May, 1902. Banks of stream. E. D. Harris.

Homestead, (W.) Sept. 11, 1902. In road near stream. F. Sherman.

12. Cicindela hirticollis Say.—Hen. No. 35.

Only record is from seashore. Specimens in N. C. Dept. Agr. Collection.

Beaufort, (*Shakleford Banks*) (*Extreme E.*) Aug. 9, 1902. Along inlet shores in company with *C. dorsalis* var. *media* and *C. marginata*. F. Sherman.

13. Cicindela punctulata Fab.—Hen. No. 40.

Common apparently throughout the state along paths. Specimens in N. C. Dept. Agr. Collection.

Beaufort, (Extreme E.) Aug. 11, 1902, common. F. Sherman.

Raleigh, (E. C.) July 15, 1902. F. Sherman.

Chapel Hill, (C.) Sept. 17, 1885. G. F. Atkinson.

Oakdale, (C.) Aug. 1902. F. Sherman.

Greensboro, (C.) Aug. 25, 1902, common. F. Sherman.

Newton, (C.) Aug. 1902. F. Sherman.

Burnsville, (W.) Sept. 1902, Oct. 1. 1902. F. Sherman.

Blowing Rock, (W.) Aug. 1902, common along path. F Sherman.

Waynesville, (W.) July 1901, common along path. F. Sherman.

Retreat, (W.) May 15. Hubbard and Schwarz.

14. Cicindela dorsalis var. **media** Lec.—Hen. No. 42 a.

Only record is from seashore. Specimens in N. C. Dept. Agr. Collections.

Beaufort, (*Shakleford Banks*) (Extreme E.) Aug. 9, 1902, common on inlet shores in company with *C. marginata* and *C. hirticollis*. F. Sherman.

15. Cicindela marginata Fab.—Hen. No. 44.

Only record is from seashore. Specimens in N. C. Dept. Agr. Collection.

Beaufort, (*Shakleford Banks*) (Extreme E.) Aug. 9, 1902, on inlet shores in company with *C. dorsalis* var. *media* and *C. hirticollis*. F. Sherman.

16. Cicindela blanda Dej.—Hen. No. 49.

There is but one indefinite record for this species. "*N. C. River banks.*" Leconte record.

17. Cicindela gratiosa Guer.—Hen. No. 54.

Only record for this species is from Wilmington, seven miles from seashore. Specimens were probably taken on shore. Specimens in N. C. Dept. Agr. Collection.

Wilmington, (S. E.) Wenzel.

18. Cicindela rufiventris Dej.—Hen. No. 64.

All records are from middle part of state. Specimens in N. C. Dept. Agr. Collection.

Raleigh, (E. C.) July 15, 1902. Along road in open mixed woods. F. Sherman.

Durham, (C.) Aug. 1902. In field near mixed woods. F. Sherman.

Oakdale, (C.) Aug. 22, 1902. F. Sherman.

Greensboro, (C.) Aug. 1902. F. Sherman.

19. Cicindela abdominalis Fab.—Hen. No. 67.

Only records from southeastern part of state. Specimens in N. C. Dept. Agr. Collection.

Southern Pines, (S. E.) Aug. 15, 1902. At edge of pine woods. F. Sherman.

Wilmington, (S. E.) Wenzel.

Two New Bees.

By T. D. A. Cockerell.

Anthophora stanfordiana n. sp.—♀. Length about 15 mm.; black, with erect black hair, except that the mesothorax as far back as the hind edge of the tegulæ, and the dorsum of the second abdominal segment except basally, are thickly covered with ochraceous hair, and there is a little pale hair in other places, namely on the face, labrum, hind margin of third dorsal abdominal segment, and especially on the fourth and fifth ventral segments of the abdomen, where the light hairs are both numerous and long. The femora are dark red, but the tibiæ are reddish-black, while the tarsi are dark with the small joints reddish; the hair on the legs is black, but the middle tibiæ are tipped with pale, and there is at the apex of the basal joints of the hind tarsi a very conspicuous golden brush; the spurs of the middle legs are dark with strongly curved red tips. Tegulæ black and shining, with close minute punctures; wings fuliginous, basal nervure meeting transverse-medial.

♂. Length about 15 mm.; black, the clypeus, supraclypeal stripe, labrum, spot on mandibles, lateral face-marks and front of scape, light yellow; the upper edge of the lateral face-marks is deeply concave, the orbital side ending in a sharp point at the lower level of the antennæ sockets; flagellum entirely black; hair at face, front and cheeks long and white, of occiput black; hair of thorax long and creamy-white, except on hind part of mesothorax, scutellum, and between the wings and the middle and hind coxæ, where it is black; mesothorax and scutellum with smooth and shining areas; wings considerably lighter than in the female; legs with mixed black and light hair, long and white on outside of tibiæ

and tarsi, purpureo-fuscous on inner side of basal joint of anterior tarsi, bright orange-ferruginous in the same position on the middle and hind tarsi; middle legs simple; basal joint of hind tarsi flattened and contorted, with a large tooth on the anterior margin; abdomen with erect hair, entirely yellowish-white on the first two segments, sparser and black on the others, with some long white hairs at the sides; apical segment strongly convex, bidentate, tomentose basally, with a slight longitudinal keel; venter with a band of light hair.

Hab.—One of each sex, collected May 17, 1892, by W. G. Johnson on the campus of Stanford University, California. The species is allied to *A. bomboides*, and would even better merit the name than that insect. It is one of the finest and most interesting bees in our fauna, and it seems remarkable that it has so long remained undescribed. Prof. V. L. Kellogg, to whom I am indebted for the specimens, kindly gives me the following information; "I have, among other specimens, perhaps two dozen taken from a single colony, the individual nests of which were all put in close together. This colony was situated in the side of a deep bank in somewhat sandy but nevertheless very hard and compact soil. Each entrance was capped by a long tube, two or three inches in length, made of bits of soil stuck together, and bent down so as to make the entrance obscure when looked at from above; also so as to protect the opening from falling water. The nest-tubes were about one-half inch in diameter." (Litt., Nov. 20, 1903.)

Megachile latimanus grindeliarum subsp. n.

♀. Length 14 millim.; the light pubescence yellowish throughout; vertex and disc of mesothorax with much black hair (as in *mendica*), but scutellum with yellowish hair; abdominal bands weaker and narrower (with shorter hair), yellowish-tinged, with the overlapping pale orange hairs on the last two bands conspicuous; the erect black hair does not overlap the bands, nor does it project laterally (as it does in *monardarum*) so as to be conspicuous at the sides when the abdomen is viewed from above; ventral scape orange throughout; second recurrent nervure ending very near to the second (morphologically third) transverse-cubital; hair on inner side of basal joint of all the tarsi bright orange; apical dorsal segment of abdomen with erect yellowish bristles; abdomen perceptibly narrower than in *latimanus*.

Hab.—Colorado Springs Colorado, Sept. 10, (Cockerell). One at flowers of *Grindelia squarrosa*. Another, with denuded mesothorax, from the same locality.

The discovery of the male will probably show whether *grindeliarum* is really a race of *latimanus*, or a valid species. It seems just possible though not at all probable that it is the female of *M. avara*, of which the male only is known. It will be known from *M. nevadensis* by the ventral scopa being without black at the tip; the dorsal apical segment in *nevadensis* is said to be pale sericeous, that is, resembling that of *M. mendica*, and not that of the restricted group of *latimanus*, Robertson's genus *Xanthosarus*. The very much denser punctuation of the mesothorax, as well as the absence of projective black hairs at the sides of the abdomen, readily distinguish *grindeliarum* from *monardarum*. The description of *M. vidua*, Smith, so nearly accords with *grindeliarum* that I at first thought it possible that it might be applicable; but our insect is so unlike *M. maritima* (the European representative of *vidua*) that I do not think it can be *vidua*.

A New Beetle from New Jersey.

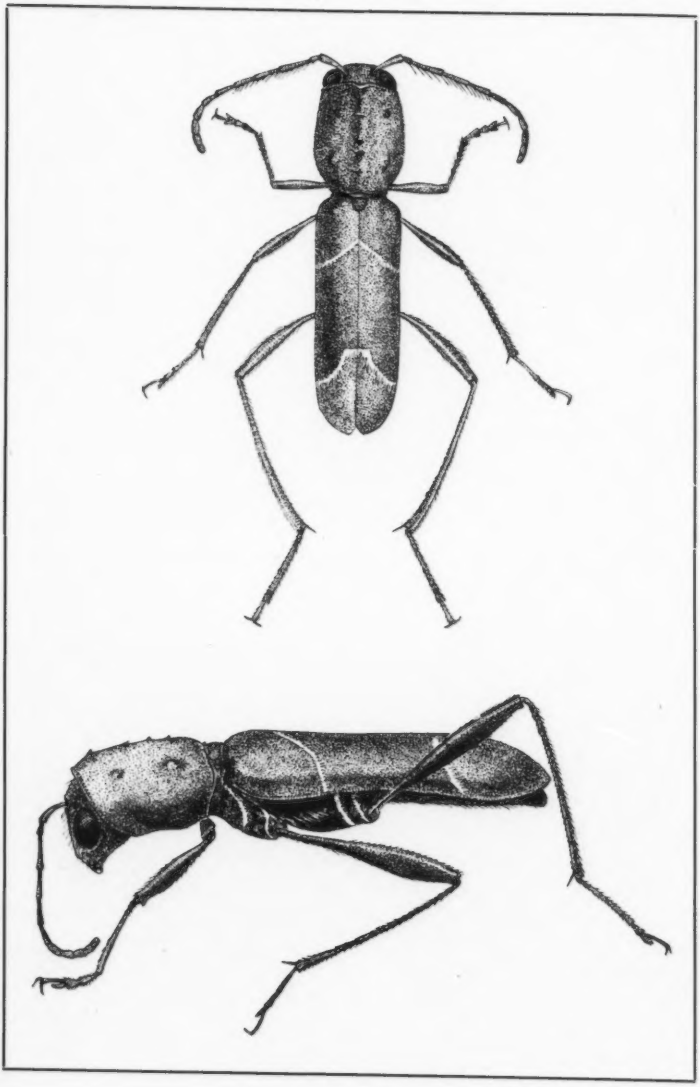
By Wm. T. Davis.

(See Plate VI.)

Lakehurst, New Jersey, once called Manchester, has been to some of the New York City entomologists what Anglesea is to those from Philadelphia, or what "Butterfly Station" was to the insect collectors of Albany in the days of Mr. Bailey and Dr. Lintner. This is synonymous with saying that many interesting insects have been collected at Lakehurst, and it gives me pleasure to add to the number a Longicorn beetle pronounced by both Mr. Leng and Mr. Schæffer to be a new species. It is true that but one specimen has been taken, but its characters are such that it has been considered worth while to bring it to notice. It was collected last July while beating into an umbrella, and was pointed out as a valuable acquisition by Mr. Louis H. Joutel, for whom I am pleased to name it.

Neoclytus jouteli n. sp.

Black, head, thorax and elytra, except apical third, finely rugose. Antennæ dark brown clothed with light hairs; second joint short, as usual; outer joints slightly thickened. Head black, not carinated, eyes entire, oblique; front clothed with lighter hairs. Thorax black, clothed beneath



NEOCLYTUS JOUTELI (DAVIS).

with lighter hairs; longer than broad, sides slightly arcuate, little wider than the elytra, and with fine strongly elevated transverse rugæ at middle and others on each side. Elytra, black with two oblique bands of white hairs, the anterior band narrow and the most definite. Beyond the posterior band much smoother; shining; slightly tuberculate and with minute pubescence. Abdomen black beneath; the meta-sternum dark brown with two transverse stripes of white pubescence. Legs dark brown, the femora black, or nearly so.

The length of the type is 6 mm., but the size will no doubt vary considerably as in other species of the genus. The insect is about the size and general aspect of a black *Euderces picipes*, but the structural characters are entirely different, and the resemblance does not extend beyond the first glance.

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WALDOBORO, MAINE, December 4, 1903.

ENTOMOLOGICAL NEWS.—Enclosed please find $1 in renewal of my subscription for the ensuing year. I am much pleased by the position taken by the NEWS on the question of species and genera. If it were not for such protests there would be great danger that our system of classification would be reduced to a meaningless mass of names. The wholesale formation of monotypic genera and the description of species based on trivial characters should be stopped. Authors should, moreover, be compelled to deposit their types in some large museum, where they would be accessible to all students, before their descriptions are published. There is no influence to-day in American entomology so strong as that of the NEWS.—JOHN H. LOVELL.

ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, three weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—ED.

PHILADELPHIA, PA., JANUARY, 1904.

Prof. T. D. A. Cockerell has made a suggestion which we considered well worthy of being adopted by the NEWS. Instead of placing on the cover of the NEWS what he was pleased to term a monstrosity, he proposed a figure of the most interesting insect described during the previous year, and said that in his opinion *Ignotus ænigmaticus*, Slosson,* was pre-eminently the one to use for this year, and we coincided in this opinion. This curious beetle was described by Mrs. Slosson in the Canadian Entomologist, vol. 35, page 183, and the account of its discovery is interesting reading. That most eminent savant, Mr. E. A. Schwarz, had the figure made for the NEWS. We have always found him more than willing to do anything to unselfishly advance the interests of entomology. In the future we propose to adopt the same plan of using a figure of the most interesting insect described during the previous year, for the cover of the January NEWS, and will be glad to receive any and all suggestions as to which species shall be selected. The selection will be made by the Editors in conjunction with the Advisory Committee.

* Described as being the size of a tiny brown ant.

Entomological Literature.

THE MOTH BOOK. A Popular Guide to a Knowledge of the Moths of North America. By W. J. Holland. With Forty-eight plates. Doubleday, Page & Co. New York. Price $4.00 net. Postage 34 cents extra.

There are 1500 figures in the colored plates and 300 text cuts. This work is uniform in size and typography with the well known Butterfly Book by the same author. Probably no book on any branch of American entomology has been anticipated with such keen interest as this one. The literature of the subject is greatly scattered through many publications and papers, and figures of our moths are by no means numerous. There existed no one book which the beginner could consult, and this work will be invaluable and will undoubtedly stimulate a much greater interest in these most interesting insects. The author has figured many species in a beautiful manner, as the three color process gives mechanical accuracy in maculation even though in some cases the color values are not quite perfect. We believe that the process, even with this imperfection, gives the best results attainable for any but the very small species. The author has wisely omitted descriptions and has been content to give notes in relation to food plants and distribution. The classification follows the recent literature of the best authorities on the subject. As a whole the work is well done, and the author has made a good selection from the abundance of material. When we take into consideration the fact that there are over 6000 species of moths in America north of Mexico it is a splendid contribution to the subject to have 1500 or more of them figured in one work. The book will be an absolute necessity in the library of every lepidopterist, and a valuable one to all persons interested in entomology or natural history in general.—H. S.

FIRST ANNUAL REPORT ON THE NOXIOUS INSECTS OF THE STATE OF ILLINOIS. By Benjamin D. Walsh, M.A., Acting State Entomologist. From the Appendix to the Transactions of the Illinois State Horticultural Society for 1867. Second Edition.

The original report has long been out of print. Prof. Forbes says of it: "I am pleased to have the opportunity to issue a second edition of this useful and interesting document, to the number of one thousand copies, and I do not doubt that its republication at State expense is amply warranted by the intrinsic value of its contents, and by its importance as the first of a long series of reports of the official entomologists of this State." We are glad to see this reprint and fully endorse all Prof. Forbes has said about it. We quote from the preface as follows: "In a memoir intended for publication in the proceedings of some grave scientific society, it would, of course, be highly indecorous to break the

dreary monotony of scientific hair-splitting by a single remark, which had the slightest tendency towards extending that convulsive movement of the midriff, which the vulgar herd of mankind call 'laughter.' But as this Report is intended chiefly for the use of common folks, who do not think it beneath their dignity to indulge occasionally in a hearty laugh, I shall be pardoned, if I inadvertently here and there drop a word which may cause the cheek of the reader to mantle with a smile. Four hundred years ago Martin Luther said, that 'he could see no reason why the devil should run away with all the good tunes.'

"I can see no reason, in the year 1867, why the pestilent yellow-covered literature of the day should monopolize all the wit and humor. If there is one thing which I have at heart more than another, it is to popularize science, to bring her down from the awkward high stilts in which she is ordinarily paraded before the world—to show how sweet and attractive she is when the frozen crust in which she is usually enveloped is thawed away by the warm breath of Nature—and more especially to demonstrate how delightful that particular branch of science, to which I have devoted half a life-time, may be made to any one, who will keep his eyes wide open as he walks through his garden or his orchard. If I merely succeed in enticing away a single young woman from her mawkish novelettes and romances into the flowery paths of Entomology, or if I can only induce a single young man, instead of haunting saloons and lounging away his time at street corners, to devote his leisure to studying the wonderful works of the Creator, as exemplified in these tiny miracles of perfection which the people of the United States call 'bugs,' I shall think that I have not written altogether in vain."

SYNOPSIS OF INSECT COLLECTIONS FOR DISTRIBUTION TO ILLINOIS HIGH SCHOOLS. Lepidoptera. By Charles A. Hart, Illinois State Laboratory of Natural History, Urbana, Illinois.

This work lists and briefly describes the commoner insects and those of economic importance. References are given after each species to figures and fuller descriptions in the literature of the subject. This method of issuing collections to schools is a most valuable method of instructing young people and will undoubtedly create a great interest in this branch of natural history among young people. We wish this method would be adopted in every State and Territory in the Union.—H. S.

AQUATIC INSECTS IN NEW YORK STATE. *N. Y. State Museum Bulletin 68, August, 1903, Part 3, Life Histories of Odonata, Suborder Zygoptera, Damsel Flies, by James G. Needham, pp. 218–263; Appendix on Odonata, pp. 263–276, James G. Needham; Distribution of New York Dragonflies, Additional Data, pp. 276–279, Dr. P. P. Calvert.* Mailed about October 1, 1903.

In his remarks introductory to this bulletin, on p. 203, Prof. Needham states: "My chief contribution to this bulletin is the description of the life histories and habits of the damsel flies (order Odonata, suborder Zygoptera). I have been able to describe the nymphs of all our 10 genera and 23 of our 42 known species all these descriptions being new." And on p. 218 he continues, "Of these 23, three are Calopterygidæ, five are Lestinæ and the remaining 15 are Agrioninæ; and fortunately the nymphs of all our genera are now known."

Directions and suggestions for collecting life history material in this suborder are given on p. 219. Keys to families, subfamilies, genera and species of imagos and known nymphs follow. Detailed notes on the scope, range and general ecology of the larger groups are interspersed; and for each species the more important bibliography, special habits, and a description of the nymph, if known, are given. On page 222, in the key to species of *Calopteryx*, *amata* is stated to have the wings uniformly colored. As originally described by Hagen and as verified by the examination of a considerable number of specimens, adult males have the hind wings apically brown. On p. 245, a new genus, *Chromagrion*, is described for *Agrion conditum* Hagen, which, since 1876, has generally been written ? *Erythromma conditum*. The genus is defined both for the imago and nymph, and finds its nearest affinities with *Erythromma* and *Pyrrhosoma*. On p. 251 it is stated, "they (Enallagmas) do not, so far as I have observed, descend beneath the surface of the water in ovipositing." At Round Lake, Whitley County, Indiana, *Enallagma signatum* in couple has often been seen submerged; and see McLachlan, Ent. Mo. Mag. (2) Vol. 10, p. 207. On p. 253 the name *annexum* is retained for the species which, as determined by Calvert and Williamson, is identical with *cyathigerum*. *Agrion positum* Hagen, usually known heretofore as *Nehalennia posita*, is, with reason, taken from *Nehalennia*, (not *Nehallennia*, as in the bulletin under review) and placed in *Ischnura*, though it also shows affinities with *Enallagma*.

Appendix on Odonata, page 263: "During the past season there has been opportunity for making some further observations on the Odonata-Anisoptera. * * * * It is now possible to add descriptions of the nymphs of eleven additional species with new data on some of the others" discussed in Bulletin 47, New York State Museum, September, 1901, pp. 429-540. On page 264, the past confusion between *Gomphus fraternus* and *G. externus* may have resulted from a mistake made by Professor Needham in comparing his specimens with the Illinois State Laboratory specimens, rather than through an error by Hagen,—an error hardly possible in the light of the figures drawn by Hagen for the *Monographie des Gomphines*, Pl. 7, fig. 4, 1855, and Pl. 21, fig. 2, 1858. *Gomphus borealis* is now regarded by Professor Needham as specifically distinct from *G. descriptus*. *Gomphus dilatatus* is designated as the type of *Gomphurus*, and the remarkable nymph of this species is described. On p. 275, the habitats of the nymphs of 62 species of Odonates are given in tabular

form. It is of interest to note "that, while the majority of the species live in ponds or still water, the more generalized members of both suborders live in rapids of streams." Pages 276–279 by Dr. Calvert are notes supplemental to the two lists of N. Y. Odonata published by himself. At the present time about 125 species of dragonflies are known to occur in New York.

In Part 2 of this bulletin, on pp. 212 and 213, is a discussion of the ecology of *Æschna constricta*, especially with reference to its economic importance in relation to brook trout.—E. B. W.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

Melanoplus canonicus.—Scudder describes this species from the "Grand Canyon of the Colorado, Arizona, (L. Bruner)." It ought to be recorded that the specimens, though from Prof. Bruner's collection, were collected by Prof. C. H. T. Townsend, who obtained them (according to a MS. note of his in my possession) down in the canyon, about 3000 to 4000 feet above sea level.—T. D. A. COCKERELL.

A THIRD TRIONYMUS.—In Mrs. Fernald's Catalogue of the Coccidæ there are two species of this genus recorded, one American, the other European. I find from an article by Sajo in Zeits. für Pflanzenkrankheiten, 1894, p. 151, that there is a third species, *Trionymus hordei* (*Westwoodia hordei*, Lindemann), found in Russia and Hungary. As this insect has apparently been overlooked by coccidologists, it is just as well to call attention to it.—T. D. A. COCKERELL.

IN the Nov. NEWS, page 297, Mr. Philip Laurent doubts the capture of *Danais berenice strigosa* by myself at Miami, Florida. It would have been more logical for Mr. Laurent to have seen my specimens before expressing his convictions, as there is no doubt about var. *strigosa* being found there. I took about ten specimens of *Timetes petreus* at Miami which were identified for me as *eleuchea*. I did not discover until the present time that they had been erroneously determined for me as *eleuchea* and so published in my list.—MORGAN HEBARD, Chestnut Hill, Philadelphia.

I CAN GO Mr. Morgan Hebard and Mr. Ellison A. Smyth one better on the northern distribution of *Thanaos naevius*. I have in the collection of the Dept. Agriculture, a specimen determined as this species on authority of Dr. Dyar, which was taken by Mr. C. S. Brimley, at Raleigh, N. C., on May 18th, 1902.—FRANKLIN SHERMAN, Jr., Ent. Dept. Agr., Raleigh, N. C.

THE DISTRIBUTION OF CATOPSILIA EUBULE.—The range of this species seems to be attracting the attention of some of the readers of the NEWS, and, observing the note of Mr. Witmer Stone in the October number, I am tempted to say that having for a number of summers made my home at Spring Lake, New Jersey, and other points on the New Jersey coast, I never failed to find the insect quite abundant in August and September. In the summer of 1896 and 1897, it was particularly common, so that we ceased to pay any more attention to it than to the common *Colias philodice*. My friend, Dr. A. E. Ortmann, informs me that the species is very abundant at Princeton, New Jersey, in the fall, and that he has found the larvæ on its food-plant, *Cassia marylandica*, all through the Stony Brook valley, near Princeton. In western Pennsylvania it is scarce, but it has been taken a number of times in the vicinity of Pittsburgh, and I have a specimen taken as far north as Meadville, Pa. It occurs occasionally in Ontario and Wisconsin, and in the lower valley of the Ohio it is not at all rare.

By the by, the generic name of the insect is the one above given. The name *Callidryas*, according to the best usage, is confined to the species occurring in the old world and the name *Catopsilia* to the species of the new world. There is a clear line of structural difference between the Indo Malaysian and Ethiopian species on the one hand, and the Neotropical species on the other.—W. J. HOLLAND, Director Carnegie Museum.

CATOPSILIA EUBULE NORTH OF PENNSYLVANIA.—I have read with interest the remarks published from time to time in the NEWS regarding the northern range of *Catopsilia eubule*. Mr. Stone, in the November issue, remarks that he has not until this year observed it north of Cape May County, New Jersey.

More than twenty years ago I used to take this species near East Hampton, Long Island, where it occurred in September. It was not especially rare, though usually very difficult to capture, seldom alighting, but flying steadily across country or along the ocean beach. I never observed it more than a mile inland, where vegetation begins to grow more thickly. *Petunias*, *Gladioli*, and other flowers around the seaside cottages would occasionally tempt one of them and make its capture possible.

Summer before last (1902), for the first time, I observed *eubule* at Greenwich, Conn., near the shore of the Sound, and last summer several were seen, in October.

The remark of Scudder (Guide to the Butterflies, 1899), that the appearance of *C. eubule* in the northern States "may be entirely due to migration" seems to me at least very possible. Its habit of flight as observed on the Long Island coast would suggest this, and in this connection is another observation that has always impressed me; *C. eubule* is an extremely wary and strong flying butterfly when seen in this region, but in Florida it is not especially so. In fact, I have usually found it there among the easiest species to capture.—W. C. WOOD.

THE communication of Dr. Castle in the September number of the ENT. NEWS, page 244, to the effect that, while collecting in Florida, he there encountered a species of *Galerita*, which bombarded like the species of *Brachynus*, recalls the only experience of the same kind that I have had, and which now seems not unworthy of publication. Among a colony of about a dozen specimens of our common *Galerita janus*, congregated under a stone and found on the Chestnut Ridge in the spring of 1899, there was one that, much to my surprise, distinctly bombarded like a *Brachynus*. This it did but a single time, and no effort on my part could force it to repeat the performance. Ever since this occurrence I have been paying close attention to the various colonies of *Galerita* that I have met, but in no case did another evidence of their power of bombarding come under my observation, and hence I considered it anomalous and exceptional and not generally possessed by all the individuals of *Galerita janus*, or but extremely seldom employed by them when disturbed.

It would be interesting to ascertain whether, as implied, Dr. Castle has observed many, or at least several of the Florida *Galerita* in the act of bombarding, or. as in the instance here recorded, but a single specimen. P. JEROME SCHMITT, O. S. B., St. Vincent's, Beatty, Pa.

PROBABLY no State in the Union is more agitated over insect pests than is Texas; and in very few States is as much entomological work being done. On November 5th and 6th a Cotton Convention was called at Dallas, Texas, the principal subject of the discussion being the Boll Weevil and Boll Worm. This was the second session of this Convention, the first being held in December, 1901. At the close of the session, Prof. F. W. Mally, formerly State Entomologist of Texas, very hospitably entertained the other Entomologists in attendance. The following note given in the Texas Farm and Ranch is sufficiently accurate with the exception of some of the details of the menu:

ENTOMOLOGISTS' BANQUET.—"After the late Cotton Convention in Dallas, Prof. F. W. Mally, of Garrison, Texas, entertained a number of distinguished entomologists at a banquet at the Oriental. Among the guests were: Prof. W. D. Hunter, Victoria, Texas; Prof. Sherman, Raleigh, N. C., Prof. H. A. Morgan, Baton Rouge, La., Prof. E. Dwight Sanderson, College Station, Texas, and Prof. A. L. Quintance, Victoria, Texas.

Farm and Ranch was not furnished with a copy of the menu, but it assumes that it ran something like this:

Weevil au naturel.

Buillon d'insecte. Boll Worm Cocktail.

Weevil on the Square.

Bolls a la puncture. Boll Worm Roti.

Cotton Stalk Tips. Alkali Cotton a la Shear.

Big Bugs a la Wilson. Cotton Blanche au Jester. Exterminators."

All of those present with the exception of Prof. Sherman of North Carolina and Prof. Mally, who is now engaged in the nursery and fruit business at Garrison, are actively engaged in entomological work in Texas. In addition to these gentlemen there are now working in Texas the following: As assistants to Mr. Hunter, Mr. W. E. Hinds, Mr. G. H. Harris and Dr. Morrill, Mr. A. F. Conradi, Assistant State Entomologist, and L. H. Scholl, in charge of the Experimental Station Apiary at College Station.

The work of the Division of Entomology of the Department of Agriculture and of the State Entomologist has resulted in demonstrating practicable methods of fighting the Boll Weevil and Boll Worm, and it is now largely a question of getting the cotton planters to adopt the improved methods of culture outlined.—E. DWIGHT SANDERSON, State Entomologist.

Doings of Societies.

A regular meeting of the Entomological Section, Chicago Academy of Sciences was held in the John Crerar Library, Thursday evening, November 19, 1903. Seven members present. Mr. Longley in the chair.

The election of an Honorary Curator of the Section being in order, Mr. Comstock nominated Mr. A. B. Wolcott.

No other nominations being made, the Recorder, on motion of Mr. Kurst, cast the ballot. Mr. Wolcott was unanimously elected.

No further business being before the meeting, Mr. W. L. Tower took the floor for a talk of entomological interest on Mexico. JOHN COMSTOCK, *Recorder*.

The Ninth Regular Quarterly Meeting of the Pacific Coast Entomological Society was held at the Cafe Odeon, 8 and 10 O'Farrell St., San Francisco, on the evening of August 15th.

President Fuchs in the chair.

Twelve members and eight visitors were present. Two new members were elected.

President Fuchs delivered his annual address, which was followed by the election of officers. Result: For President, Charles Fuchs; Secretary and Treasurer, F. E. Blaisdell; for Assistant Secretary, Leon Munier.

Mr. James Cottle reported his "Second Trip to Shasta," giving a list of the species captured—the following not having been included in his report given at the sixth meeting of the Society (see ENTOMOLOGICAL NEWS, vol. xiv, No. 2, p. 60): *Argynnis leto* and *rupestris*, *Satyrus sylvestris*, *Thecla melinus*, *Philampelus achemon*, *Deilephila lineata*, *Protoparce celeus* and *Sphinx perelegans*.

Prof. H. F. Wickham, being present, responded to a call by giving some observations made during his collecting trip, not then completed. Mr. Alex. Craw gave an account of his work in the introduction of parasitic insects.

Mr. George Coleman gave a talk on the ravages of *Dendrotonus*. Mr. L. E. Ricksecker exhibited a scolytid beetle that he has observed attacking fruit trees, on the shaded sides of the trunks and branches. Mr. F. W. Nunenmacher exhibited specimens of blown larvæ that showed great skill in the art.

Mr. James Cottle, specimens of *Sphinx lineata* with a very marked variation in color markings; Coleoptera: *Pityobius murrayi* ♂ and ♀, *Hylotrupes amethystinus*, *Pachyta spurca* and *Cychrus convergens* (= *opacicollis* Casey)—all four near Mount Shasta. Mr. J. C. Huguenin, specimens of *Argynnis adiante* (♀), *liliana* and a Satyrus near *sylvestris*—all from the Santa Cruz Mountains.

Dr. F. E. Blaisdell, a box of *Eleodes* (sub genus *Eleodes*), showing the new arrangement according to his recent studies.

F. E. BLAISDELL, M. D., *Secretary*.

Minutes of meetings of Brooklyn Entomological Society, Brooklyn, N. Y. (Continued from p. 31, Vol. xiii.)

April 14, 1901.—Twenty-two persons present. Prof. John B. Smith presiding. Messrs. Eugene A. Bremser and Lawrence Ericson were elected members.

Announcement was made that the Trustees of the Brooklyn Institute of Arts and Sciences had conferred the title of Patron upon Mr. Edward L. Graef, by reason of the gift of his library and collection to that institution. Archibald C. Weeks read a paper upon the "Injurious Effects of Field and Forest Burning in Greater New York and Vicinity," showing that the

miscellaneous annual burning of meadow and woodland destroyed much organic matter, rendered the landscape unsightly, exposed the soil so that it became parched, caused the drying of small ponds and streams, killed young trees and plants, and destroyed more beneficial and harmless insects than injurious ones; while the destruction of plant and insect life caused many birds to be driven away.

Discussion by Messrs. Graef, Smith, Roberts, Watson, Wasmuth and Weeks.

May 2, 1901.—Twenty-four persons present. Prof. John B. Smith presiding. Messrs. Carl Schaeffer and G. N. Barber were elected members.

Lecture by Dr. R. Ellsworth Call, on "The Mammoth Cave and its Entomological Fauna," illustrated by lantern views, showing almost all the known species taken therein. Collecting was a matter of great difficulty, as the interior of the cave was absolutely dark, and the only illumination was by means of oil lantern. By this light the collector often laid face downward and captured whatever appeared to move. Cave crickets (*Ceutophilus*) were abundant more than a mile from the entrance. The organs of vision were lacking in most of the species of cave inhabitants; in many forms their position was indicated by pigment. With one or two exceptions, the cave insects differed completely from the out-of-door forms occurring in the vicinity.

June 12, 1901.—Twenty-six persons present. Prof. John B. Smith presiding. Messrs. Roy S. Richardson and Howard Bennett were elected members.

Prof. Smith presented a series of lantern views illustrative of "Some Notes on Economic Entomology in Europe," which he had obtained while on a visit abroad during the previous summer, and gave descriptions of the scenery and inhabitants, and of the methods of dealing with destructive insects.

October 3, 1901.—Twenty-four persons present. Drs. John L. Zabriskie and Otto Seifert were elected members. Discussion as to the introduction of *Samia cynthia* in the vicinity of New York, and the extent to which it was subject to parasitism. Mr. Johnson stated that the introduction of *S. cynthia*

in this locality was due to the fact that at one time the strain of *Bombyx mori* became depreciated, and in the course of experiments to provide a substitute, the United States Agricultural Department sent him one hundred cocoons. After three years' confinement, some of the larvæ were placed upon an *Ailanthus* in his yard; from whence the moths escaped and spread. For a number of years they were free from parasites, but were now subject to the same attacks as our allied native species. Sparrows destroyed the larvæ after the first moult, though but rarely after the second. Dr. Meeske and Messrs. Roberts and Weeks instanced the parasitization of *cynthia* by *Ophion macrurum* and a species of *Smicra*. Prof. Smith noted that this moth preferred to frequent the vicinity of large cities. This, however, might be due to to the greater supply of food plant to be found in such localities. Mr. Akhurst related his experiments in breeding *jama-mai* for its silk. The insect so far, however, had refused to become acclimated.

Dr. Call read copies of two interesting letters: one by Edward Doubleday to S. Calverley, formerly of Brooklyn, dated at Epping, England, December 17, 1840; in which, among other things, Mr. Doubleday states that he is preparing a work on United States Lepidoptera, and had 967 species enumerated. The other was by Dr. Thaddeus William Harris to Mr. Calverley, dated at the Library of the University, Cambridge, Mass., November 16, 1848, written in response to Mr. Calverley's request for a copy of "Insects Injurious to Vegetation," and in which Mr. Harris inquires who had identified Mr. Calverley's specimens, as he did not "suppose there were five persons in the United States who could do it."

Dr. Call also read a paper upon the species of *Anophthalmus* occurring in the United States. Although there were a number of names, some were probably synonyms; which would reduce the actual number of species to eight. In fact, the generic name could be eliminated, and the several species merged with *Trechus*, since there were no structural differences upon which to base distinctions; the aborted eyes not being recognized as a generic character. Prof. Smith preferred retaining the generic name, because it was desirable to have a

distinctive nomenclature in cases in which peculiar features were present, even if little value had been assigned to them elsewhere.

November 7, 1901.—Twenty-nine persons present. Prof. John B. Smith presiding. Mr. John Kalbert was elected a member.

Prof. Smith spoke upon the structure, life history and destruction of certain species of mosquitoes. He made detailed explanation of their methods, the result of their attack and their position as purveyors of various febrile and malarial diseases. His remarks were illustrated by lantern views and embodied many of his original investigations and observations.

December 5, 1901.—Twenty-five persons present. Prof. John B. Smith presiding. The death of Dr. Herman Strecker was announced, and Messrs. Graef, Love and Weeks were appointed a committee to prepare suitable resolutions.

Dr. Love exhibited a box of Ichneumonidæ, and suggested the propriety of noting and preserving carefully all parasites emerging from pupæ, for the purpose of increasing our knowledge of this family.

Dr. Seifert exhibited some 750 bred specimens of *Arctia nais* supposed to be var. *vittata*, and related his experience in breeding from a gravid female which he took in Florida in March, and his inability to mate its progeny with *vittata* in this locality. He had also made experiments in rearing the larvæ of *nais* upon various food plants, and had subjected the pupæ of different broods to extremes of heat and cold.

Discussion as to effects of heat and cold and æstivation, by Prof. Smith, Messrs. Franck, Graef, Meeske and Weeks. Mr. Weeks instanced an *Acronycta* chrysalid found in March, 1901, the larva of which undoubtedly pupated in the fall of 1900, and which had so far failed to emerge, though still alive. (The moth proved to be *A. americana*, and appeared in May, 1902).

Mr. Franck exhibited a second specimen of *P. philenor*, var. *wasmuthi*, which had been taken in Flatbush the previous summer, and stated that a *S. cynthia* ♂ had been found *in copulo* with a *P. cecropia*.

ARCHIBALD C. WEEKS, *Secretary*.

At the meeting of the Feldman Collecting Social held November 18th, at the residence of Mr. H. W. Wenzel, 1523 South Thirteenth Street, Philadelphia, seven persons were present.

Mr. Beutenmueller stated that the American species of *Corymbites* hitherto referred to *C. vireus* of Europe, is not that species and must receive another name.

Mr. Haimbach exhibited a box of microlepidoptera including two specimens of *Trichotaphe nonstrigella* taken at Cincinnati, Ohio. This is a rare species hitherto only represented in collections by the type specimens.

Mr. H. Wenzel referred to Mr. Beutenmuller's paper on North Carolina Coleoptera, and stated that the typical *Cychrus violaceus* and the variety of that species figured therein are no doubt the two extreme forms of the species.

Mr. Dæcke recorded the capture of *Donacia floridæ* in large numbers on Hammonton Lake, N. J., August 23.

WILLIAM J. FOX, *Secretary.*

A meeting of the Entomological Section of the Academy of Natural Sciences of Philadelphia was held November 19th. Mr. H. W. Wenzel, Vice Director, presided. Fourteen members and two visitors were present. Twenty-one species of Dytiscidæ were presented by Mr. H. W. Wenzel.

Mr. C. B. Hardenburg stated that a circular would be sent to all collectors of insects in Pennsylvania requesting information in regard to all orders of insects with a view of publishing a catalogue of the species of the State with exact data. Mr. Rehn strongly advised the movement, and said a beginning should be made along the lines indicated. Dr. Calvert said he favored such a list and would gladly aid with the Odonata. Dr. Calvert also gave an account of the course on entomology he was giving at the University of Pennsylvania. While engaged in the preparation of the course he had become specially interested in the Termites. *T. flavipes* were found to swarm in about equal numbers as regards sex. None of the winged individuals ever produce young so far as had been observed in this species. Mr. R. Godfrey was elected an Associate.

HENRY SKINNER, *Recorder.*

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Wanted.—Life histories in all orders of insects. Will pay cash or give exchange for same. Write what you have, and state lowest cash price.—Denton Bros., Wellesley, Mass.

I will collect Lepidoptera, Coleoptera, Hymenoptera, Hemiptera of this locality, in exchange for Diurnal Ledidoptera of the United States, or named Diurnals of foreign countries. Write at once.—M. E. Hoag. D. D. S., Oakville, Iowa, U. S. A.

I will give Lepidoptera, publications or cash for Smith's "Monograph of the Sphingids," published in Vol. xv, Trans. Ent. Soc., 1888.—H. H. Newcomb, 35 Court Street, Boston.

Parnidæ.—Parnidæ of the world wanted. Will pay cash or give exchange. (Correspondence French, German or English).—William D. Richardson, Fredericksburg, Virginia.

Arctians.—Living eggs or larvæ of any North American moths of the genus *Apantesis* wanted for purposes of studying preparatory stages. Will be glad to render help, if possible, as to wants of anyone assisting. Arthur Gibson, Cent. Exp. Farm, Ottawa, Can.

I have some very fine and rare exotic and native Lepidoptera to exchange for native pupæ and cocoons. Will also take Catocala and Sphinx on pins or in papers. Send small lists to Charles F. Timm, 131 Ralph St., Brooklyn, N. Y.

Desirable Lepidoptera for exchange. Would like to receive lists of good species.—John Comstock, 1572 Ridge Ave., Evanston, Ill.

Wanted Cicindela scutellaris, pulchra, sexguttata, purpurea, formosa, latesignata, fulgida, and vulgaris (any varieties), in as large number as possible. Coleoptera from northern Illinois and Indiana for excnange. Will collect as directed from the fauna of northern Ill.—V. E. Shelford, 5715 Drexel Ave., Chicago, Ill.

I wish to exchange American and European Lepidoptera and Coleoptera for American insects for the season of 1903 I am also a preparator of larvæ.—Karl Haertel, 198 California St., Newton Mass.

Coleoptera.—Paleoxenus Dohrnii Horn exchanged for Elaterids and Buprestids of the U. S. not yet represented in my cabinet.—A. Fenyes, M.D., Pasadena, Cal.

I have Beetles, Butterflies, Moths, Catocalæ, spread or in papers, from Illinois, to exchange for U. S. and exotics, or pupæ and cocoons.—A. Mares, 1671 W. 23rd St., Chicago, Ill.

American Coleoptera desired—Will give Hungarian species in exchange.—Th. Gobyelmann, Jutegyar, Ujpest, near Budapest, Hungaria.

Exchange.—Would like to exchange Coleoptera from Austria for N. American. Correspondence German and French.—Otto Spicack, K. K. Postbeamtor, Sternberg, Mähren, Austria

Rare Sphingidæ and Catocalæ wanted for cash or exchange.—Geo. J. Keller, 26 Monmouth St., Newark, N. J.

Will exchange California specimens, *Attacus ceanothi* cocoons, etc., for flies caught in other places that also inhabit California.—J. E. Cottle, 1020 Pacific Ave., San Francisco, Cal.

Wanted eggs of *Argynnis diana*.—I. RUSTON, 10 Carlton Road, Workshop, Nottinghamshire, England.

Wanted.—Lepidopterists desiring *Bembecia marginata* and var. *albicoma*, to send exchange lists of North American moths.—HENRY ENGEL, Genl. Delivery, Pittsburg, Pa.

I have a few specimens of *C. calleta* and *cinctus* to exchange for rare *sphinx* or pupæ of same.—W. T. BUXTON, 153 Walnut St., Somerville, Mass.

Wanted for cash fertile eggs of *A. luna*, *S angulifera*, *H. io*, *E. imperialis*, *C. regalis*, also of all kinds Sphingids.—ERNST JEHEBER, 118 N. Reservoir Street, Lancaster, Pa.

Wanted.—Complete files, with indexes, of American Entomologist and its successor, the American Entomologist and Botanist; also of Insect Life.—CHAS. S. DAVIS, No. 1910 Fifth St N. W., Washington, D. C.

Wanted.—Cocoons of *A luna*, *S. cynthia*, *Att promethea*, *Att. Gloveri*, *Att. cecropia*, *Hyper Io*, and *Eacles imperialis*. Will pay cash for a few of each.—DR. TILLOTSON, 744 Clinton ave., Rochester, N. Y.

Gortynas wanted.—Good prices or exchange will be given for fine specimens of *albilunata*, *erepla*, *u-album*, *juvenilis*, *medialis*, *senilislatia*, *cerina*, *speciosissima*, *verona*, *frigida*, *unimoda*, *angelica*, *insulidens*, *furcata*, *sauzælitæ*, *buffaloensis*.—H. H. LYMAN, 384 St. Paul St., Montreal.

Wanted.—Perfect colored sketches of American caterpillars (larger Sphinges and night-flies), also broken specimens of exotic macros. Correspondence solicited.—C. V. Blackburn, 101 Pine St., Woburn, Mass.

Lepidoptera of all kinds wanted for exchange of other specimens. Send list to Chas. Krueger, 1161 N. Lincoln St., Chicago, Ill.

Cicindelidæ wanted.—Cash or exchange for other insects.—Charles Stevenson, 906 St. Urbain St, Montreal, Canada.

North American Lepidoptera for exchange.—Also live cocoons and pupæ, Catocalas preferred.—Herman J. Erb, 536 Blum Place, Union Hill, N. J.

Lepidoptera wanted.—*Chrysophanus hypophleas* and vars, from all parts of North America. Also *Arg. atlantis* and *electa*, and many common Noctuidæ, including *Cosmia paleacea*.—E. H. Woolley Dod, Millarsville, Alberta, N. W. T., Canada.

Lepidoptera.—I have 200 *cecropia*, 100 *polyphemus* and 400 *cynthia* cocoons to exchange for other North American Lepidotpera.—Ferdinand Goeben, 464 Atlantic Ave., Brooklyn, N. Y.

Lepidoptera.—For exchange, fertile eggs of *Hemileuca maia*.—Alfred C. Sampson, Sharon, Mass.

Wanted.—Tortricids and Micro-Lepidoptera, especially from the West. Will pay cash and furnish pins, mailing boxes and full instructions.—W. D. Kearfott, 114 Liberty St., New York, N. Y.

Coleoptera of France exchanged for American species.—J. Perret, Place St. Maurice, 3 Vienne, Isere, France.

Illinois, Lake Superior, Texas and Californian Dytiscidæ wanted in exchange for Dytiscidæ and other Coleoptera.—John D Sherman, Jr., 390 Halsey St, Brooklyn, N. Y. City.

Wanted—In exchange or for cash various species and varieties of the genus *Eubaphe* (*Crocota*). Other Lepidoptera also desired, especially mounted specimens. Send lists to A. Kwiat, 701 Larrabee St., Chicago, Ill.

Polistes.—I wish to correspond with entomologists all over the country who are willing to aid me in the study of this genus.—S. Arthur Johnson, Fort Collins, Colo

Wanted.—Bulletin Brooklyn Entomological Society, vol. i, No. 10, or the complete volume.—Wm. J Fox, care of NEWS.

Wanted.—ENT NEWS, vol. xiv, No. 1, Jan, 1903.—Prof. H. Garman, Agric. Exper. Station, Lexington, Ky.

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MR. MORGAN HEBARD, Chestnut Hill, Phila., Pa.

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